NOTE

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Integrated Clinical Pathway of Transurethral Resection of the Prostate: Impact on Clinical Quality, Cost, and Patient and Staff Satisfaction

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ABSTRACT

The central focus of this study is an investigation into how the implementation of a clinical pathway for the surgical procedure of transurethral resection of the prostate **(**TURP) impacted on clinical quality, cost, and patient and staff satisfaction at the Aga Khan University Hospital (AKUH) in Pakistan. Clinical pathways are designed to streamline patient care delivery, maximize efficiency, minimize cost, and improve the care outcome. They address variability in practice by having providers agree prospectively on a common regimen of clinical intervention.

This study utilized a quasi-experimental, non-equivalent control group study design to answer the research questions. The study population consisted of a convenience sample of patients undergoing surgery for TURP (control and experimental), recruited to measure satisfaction among patients, and of health team members, recruited to measure satisfaction among nurses, physicians and others involved in the delivery of care to the patients with a TURP surgical intervention.

The findings showed a significant difference in the variances and outcomes as a result of the TURP clinical pathway intervention. The results showed that TURP clinical pathway intervention significantly improved all twelve nursing- and physician-related variances and outcomes, such as complete documentation, delayed consultation, delayed education and other variances. Clinical pathway intervention also significantly reduced hospital-related variances, and post-operative problems such as electrolyte imbalance, phlebitis, constipation, and urinary tract infection (UTI). The findings also showed significant improvement in patient and staff satisfaction due to clinical pathway utilization. However, no significant difference was observed in patient, hospital or financial related variances.

The current investigation identified that successful implementation of integrated clinical pathways can help professionals, managers and administrators to meet one of their biggest challenges: making optimal use of limited resources while delivering high quality, timely care.

The keys to a successful clinical pathway program lie in continued support and acceptance from clinicians, support and leadership from senior management, and the presence of a dedicated team of case managers, doctors and paramedical professionals.

STATEMENT OF AUTHORSHIP

Except where explicit reference is made in the text of the thesis, this thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma. No other person's work has been relied upon or used without due acknowledgement in the main text and bibliography of the thesis.

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CHAPTER ONE

INTRODUCTION

The focus of this study is an investigation into the implementation of a clinical pathway for the surgical procedure of transurethral resection of the prostate (TURP), and its impact on clinical quality, cost, and patient and staff satisfaction in ambulatory and surgical units of the Aga Khan University Hospital (AKUH), Karachi, Pakistan. The study extensively covers dimensions of quality in health care, a domain of provider performance that has attracted considerable attention from health researchers. The data generated from this study make a significant contribution to the professional knowledge base of health team members in the promotion of a multidisciplinary approach to patient care.

The study utilized King's (1999) Interacting Systems Framework and Theory of Goal Attainment in order to explore the phenomena of interest. This was extensive in scope to allow for the investigation and exploration of variables to answer the research questions. Data was collected on newly developed and tested instruments to formulate the scientific conclusions.

This first chapter provides an introduction to the investigation, followed by a brief consideration of previous research into clinical pathways, thus providing an overview of how clinical pathways may be utilized to address inconsistencies in the delivery of clinical quality and nursing care in health care settings. A statement of the problem from the consumer's perspective is then provided, followed by a listing of the perceived benefits of clinical pathways as compared to traditional methods, and then the rationale of the study. The chapter concludes with an outline of the aims, objectives,

research questions, and research hypotheses of the study, and an identification of the assumptions behind the study.

Access to health care is one of the basic essentials for normal existence. There is abundant evidence that people in Pakistan face many challenges to meet their health needs, and that these challenges are directly related to the current socio-cultural norms and economic status of the country. Although the Pakistani government provides free health care to its citizens, no mechanism exists in the government, private, or semi-private health care sectors to monitor clinical quality according to international standards. This means that the people of Pakistan are deprived of their basic human right to access good health care. Just over a decade ago, Mubarak (1990) identified the health care problems in Pakistan as the following: inadequate resources, inefficient and ineffective use of those resources, uneven quality of services, inadequate and inequitable distribution of government allocations to hospitals and hospital personnel, minimal attention of government physicians to public service, and a lack of established and comprehensive health services research programs.

Sharif (2001) stated that the health system in Pakistan was neither competent nor comprehensive enough to provide adequate services for the growing population. This lack of access to health services and deficient health infrastructure, coupled with the extreme poverty and lack of awareness among the population regarding health maintenance have been identified as fundamental barriers to public health advancement in Pakistan.

The National Health Survey (1996) conducted by the Pakistan Medical and Research Council (PMRC) revealed that the private sector had become the country's major provider of health care (Hasan, 2000). Given the enormous low-income population in Pakistan, the issue of equity in access to health services has become a

serious problem, meaning that the economically disadvantaged are also medically disadvantaged.

While health care is already expensive in terms of accessibility, affordability, and appropriateness, health team members have made it even more expensive by diversifying their care. Physicians, nurses, physiotherapists, dietitians and other team members practice within their own boundaries, without collaboration.. This lack of coordination and collaboration, not only impacts on clinical quality, but also increases the cost of hospitalization. Pearson (2001) stated that during any course of treatment there are walls that separate physicians, disciplines, hospitals, sub-acute facilities, home health agencies, and outpatient clinics. Getting through this maze to wellness while making certain that health caregivers are all on the same path is often left to patient ingenuity. As a result, patients feel frustrated and abandoned by caregivers, medical protocols are disrupted, and costs are often higher than necessary.

There is a growing acknowledgement that Pakistan is not an isolated case in this respect; other developing countries also face similar health challenges. The challenge of consistently providing high-quality care that is also cost-efficient is a major issue for the medical community, especially in this era of managed care. Tertiary care centers, in particular, have been under great pressure to meet the ever-changing demands and perceived needs of populations in developed and developing countries. Cheah (2000) stated, “Recent trends show an increasing tendency for the public to question professional practice and competency. There is also a disturbing trend towards an increase in malpractice litigation for medical negligence, which demands clinical audit, and risk management practices (p. 335)”.

This tension between cost and quality of health care has led health service administrators and practitioners to look for new and innovative ways of delivering

quality health care in an efficient manner. One such innovation introduced into the western model of health care is the concept of clinical pathways.

Clinical pathways use the current best evidence from systematic reviews, as well as input from multidisciplinary teams, to design the optimal course of care for all patients with a specific condition. By plotting the optimal sequence and timing of interventions by physicians, nurses and other professionals for a particular diagnosis or procedure, clinical pathways ensure that coordinated quality service is provided over the full continuum of care. Clinical pathways are designed to minimize delays, make the best use of resources, and maximize the quality of care. Macario and Lubarsky (1998) stated that peer review, quality assurance, and case management via clinical pathways are evolving mechanisms for quality improvement. Clinical pathways have been identified as a step forward in providing high quality patient care within the constraints of limited health care resources (Ahmad & Keng, 1998).

The AKUH faces the same challenge as other health care settings in providing high quality, cost effective care. The AKUH is considered to be one of the best tertiary care hospitals in Central Asia, and it strives for the provision of high quality care according to international standards. However, new technologies for diagnosis and intervention, infection control measures, and several other distinguishing features of service, have meant that the demands and expectations of patients are not always met.

The patient satisfaction survey report conducted at AKUH for the year 2000 revealed a lack of coordination among health care providers, which delayed the delivery of care and intensified dissatisfaction among patients. Patients and family members reported that they were not involved in discussions on the patient care plan, nor were they educated in their health care needs on an ongoing basis, which had the effect of prolonging their hospitalization. Patients also reported dissatisfaction with the charges

for services at AKUH, feeling that unnecessary investigations performed during hospitalization had increased their cost of care (Fareed, 2001).

In addition to the low levels of patient satisfaction at AKUH, there were inconsistencies reported in the delivery of care. These variations had, in many cases, obscured the effect of a particular intervention. For example, the surgical intervention of TURP is performed in different ways by different surgeons, with the potential for different outcomes. The operating room records of AKUH show that, in the month of December 2001, a total of 45 TURP surgeries were performed in times ranging from 45 minutes to 200 minutes (with a mean time of 105 minutes), resulting in a variation of 155 minutes for the same procedure. Clinical pathways have the potential to reduce these variations, by identifying and eliminating inconsistencies in practice.

The issues outlined above are strong motivating forces for the development and implementation of clinical pathways into the current system of health care at AKUH.

Theoretical Perspectives of Clinical Pathways

A clinical pathway is a multidisciplinary plan of care that outlines the main clinical interventions performed in the hospital by a group of professionals responsible for the care of the patient. It is used as a guide to plan, co-ordinate, deliver, monitor, review, and document that care (Cheah, 2000). Clinical pathways ensure that the care process is better monitored and streamlined for the majority of people in a given patient population, and that patients are provided with the most consistent care by minimizing variations in practice. Because pathways are based, in part, on similar previous cases, providers are better equipped to predict all aspects of the care process (including milestones, complications, and outcomes), and improve the quality of care provided to the next patient with the same condition.

Clinical pathways are an important strategy in the reduction of costs and the improvement in quality of care, as well as an integral part of the current and future marketplace in the continuum of care (Seiler, 1999). Brett and Schofield (2002) reported that benefits to be gained from the use of integrated clinical pathway include improved communication, a reduction in documentation, improved clinical outcomes, a multidisciplinary review of practice, and less duplication of care and reduction in the length of stay and cost of care. The Health Care Advisory Board[1] (1998) recommended that hospitals use clinical pathways to standardize care and resource utilization for specific diagnoses with low co-morbidities, narrow ranges of symptoms and conditions, and relatively predictable courses of care.

BENEFITS TO PATIENTS

Cheah (2000) stated that clinical pathways benefit patients because there is improved consistency in patient care, and because patients can expect similar, consistent practices and treatments for similar, consistent conditions, whichever physicians or nurses are delivering that care. The exact treatment of the patient can be individualized on the clinical pathway. Much of the medical care delivered by surgeons is based upon a combination of tradition, individual training, and personal or anecdotal experience, and, as a result, differences in surgical practice may result in different outcomes for patients with a similar condition. This leads to variation in care; for example, surgeon A may prefer to admit a patient one day prior to surgery for the pre-operative assessment, while surgeon B may prefer to have pre-operative assessment conducted via the clinic and admit the patient on the day of the surgery. Clinical pathways enable health service providers to review the best practices within an agency and establish a written protocol

[1] The Washington DC-based Advisory Board, of which the Aga Khan University Hospital has been a member for the last five years, provides best practices research and analysis to the health care industry, focusing on business strategy, operations and general management issues, to member institutions.

to be followed by all practitioners. Consequently, clinical pathways enable the administration to track consistent interventions, resulting in effective and efficient outcomes, thus reducing variations in practice. The impact of clinical pathways on health care can be understood in the context of at least one hundred aspects of care delivered to a single patient. Variation in practitioners' practice could be reduced to the most effective way of delivering care when there is an agreement among practitioners to follow the same regimen and treatment in their practice, thus standardizing the delivery of their practices.

Kitchiner, Davidson, and Bundred (1996) stated that integrated clinical pathways provide a number of benefits to patients; for example, by observing variations, staff can implement early and appropriate intervention for those patients who are not progressing as expected. Johnson (1995) stated that delays and insufficiencies in treatment are minimized due to implementation of clinical pathways, resulting in the provision of patient-focused care. Mahn (2000) stated that clinical pathways are considered to be patient management tools and are, thus, of great benefit to the patients and they support continuous improvement in the quality and delivery of patient care.

The impact of clinical pathways on patients is described further in Section Two of the literature review.

BENEFITS TO THE MULTIDISCIPLINARY TEAM

An examination of the current theoretical and empirical literature indicates that the application of clinical pathways will continue to expand in U.S., European and Australian hospitals, as demand increases for higher quality health care in the face of shrinking resources and cost containment. Cheah (2000b) commented that hospitals and health care organizations will see a transition of the care process from a fragmented

system to a collaborative multidisciplinary team approach in response to clinical pathways.

Birdsall and Sperry (1997) stated that clinical pathways address major multidisciplinary aspects of individual patient care management during an acute episode requiring hospitalization. The Health Care Advisory Board (1998) stated that by involving clinicians in the creation and deployment of clinical pathways, hospitals have achieved greater participation among the care providers in improving patient-related outcomes. In the context of delivering quality patient care, clinical pathway development is thought to encourage universal healthcare and collaboration among healthcare providers to achieve optimum care. Nurses have also taken a leadership role in introducing clinical pathways to health care delivery (Scott, 1997). The benefits of clinical pathways to staff include improved communication and a reduction in duplication of care and documentation. Pathways also have a role in risk management (Kitchiner, 1995).

BENEFITS TO ORGANIZATIONS

Clinical pathways offer considerable advantages to health care organizations for the standardization of practices in managed care environments (Davis, 1995). Nish (2000) stated that the driving forces behind the implementation of clinical pathways at the London Health Science Center were the challenges of meeting increased health care demands with decreased resources, maintaining high quality and patient-centered care, and reducing length of stay. According to Scott (1997), clinical pathways are also seen as a response to the new approach taken by the Australian Council for Healthcare Standards (ACHS). The focus of ACHS is on coordination and integration of care, patient outcome, and a demonstration of how an organization has improved its performance.

Total quality management philosophy teaches that the most effective way to improve quality is to reduce variations in service provision. In the field of health care delivery, clinical pathways provide such an approach in the hospital setting. Not only do they reduce variation in clinical processes, they also improve the quality of care while keeping hospital length of stay at an acceptable level (Cheah, 1997).

IMPLICATIONS FOR NURSES

The profession of nursing, as with other human service professions in western communities, has experienced considerable change in recent times. The public image of nursing in the male-dominated Pakistani population, however, has not altered, and nursing is still considered dirty work to be undertaken by females. To change these impressions, which are shared by patients and their families, as well as by professional colleagues, it is important for nurses to come out of segregation and move towards multidisciplinary approaches. One way to do this is with the implementation of clinical pathways, which, in health care settings, has been shown to improve multidisciplinary collaboration, and enhance the professional integrity of the nursing profession among professional colleagues, patients, and the general public.

Nurses are recognized as direct care provider professionals, with an important role in maximizing the quality of the delivery of patient care. Given this important role, it is a great challenge for nursing to retain its uniqueness while embracing a true multidisciplinary plan of care. There is some inconclusive evidence in the literature that clinical pathways improve nursing practice. For example, Walsh (1998) stated that pre-documented and standardized clinical pathways of care could release valuable time for nurses to provide quality care. In addition, clinical pathways have simplified nursing documentation by eliminating duplicate charting, which has given freedom to nurses to make independent decisions regarding care (Rasmussen & Gengler, 1994).

Furthermore, clinical pathways have replaced traditional nursing care plans in many areas (Allen, 1997; Walsh, 1998). Clinical pathways are considered to be a nursing management tool, serving as a plan of care and a documenting system (Allen, 1997). Clinical pathways also serve as guidelines for novice nurses to deliver patient care in a systematic manner using pre-printed orders.

Stephens and Mason (1999) commented that registered nurses (RNs) spend up to 30% of their time documenting care. Clinical pathways integrate nursing care plans, medical treatment protocols, and the activities of allied health care professionals into a single care plan, which defines the expected progress and outcome of a patient through the health care system (Cheah, 1997). Therefore, clinical pathways and the associated integrated documentation can save the caregiver's time and institutional dollars. It is not uncommon for hospitals to adopt the well-integrated clinical pathway as the care plan (Darer, 2002). Many hospitals report that the introduction of clinical pathway initiatives to replace the traditional nursing care plan has been in an effort to improve patient-related outcomes.

The limitation in the literature is that nursing researchers have not scientifically tested the identified proposed benefits of clinical pathways in the delivery of nursing care. However, Bailey, Wingarten, Lewis, and Mohsenifar (1998) have identified some negative impacts of clinical pathways, stating that pathways are a time-consuming activity, and, furthermore, that physician ownership and compliance is a major limitation for their success.

Statement of the Problem

AKUH regularly obtains quality and performance feedback from its clients in the form of patient satisfaction surveys, which are carried out by its marketing department. Patient feedback, suggestions and concerns are treated as opportunities by the hospital

executive team for improvement and are incorporated into the system to overcome identified deficiencies. Schneider and Boven (1999) stated that a competitive marketplace dictates the need to continually enhance a customer's experience and satisfaction when delivering quality.

In 1996 and 1999, patient needs surveys were conducted at AKUH by its marketing department to identify patient expectations. These questionnaires were approved by the Joint Staff Committee (JSC), which serves as the executive locus for the hospital's committee structure, and which also provides a forum for collaborative advice to its senior leadership on issues of clinical practice, and research, academic and administrative matters. The questionnaires were pre-tested, and interns from the psychology department of the University of Karachi conducted the first patient satisfaction survey. Based on the data obtained from these questionnaires, key service indicators were developed by the hospital's patient satisfaction survey task force. Since then, patient satisfaction surveys have been conducted on an ongoing basis for all major inpatient, outpatient and diagnostic services. Data collection continues throughout the year with patients selected randomly from the hospital's computerized database. Data from the surveys are analyzed, and the resultant reports produced at the end of each quarter are circulated to divisional directors (Fareed, 2001). Patient satisfaction surveys since 1997 have outlined the six following major areas of concern.

The most significant problem concerned the core processes of care. Patients reported that the care delivered by health team members was not coordinated, resulting in continuous delays.

The second most significant concern was that the cost of hospitalization was too high and should be reduced. Admission to AKUH is very expensive for citizens of Pakistan and other neighboring countries. The patient satisfaction survey report of year

2000 indicated that patients were least satisfied with service charges. The findings revealed that 45% of patients were dissatisfied with laboratory service charges, and 71% were dissatisfied with the surgical day care service charges. Among all the service attributes, patients gave the lowest satisfaction ratings to charges. Satisfaction with charges ranged from the lowest (51%) for the main laboratory, to the highest (82%) for the Community Health Center (CHC). In fact, patients suggested a reduction in charges for all services, except for the CHC (Fareed, 2001). The issue of affordability of health is extremely important for the Pakistani population, where, according to the Wealth Survey (1998) report, the average monthly family income is PKR2000 (AUD$66) (Hasan, 20000). Furthermore, due to the unavailability of health care insurance, patients have to pay for access to health care out of their own pockets. Fareed (2001) identified that 75% of patients admitted to AKUH are self-paying patients and 15% are corporate clients; needy clients unable to afford the full cost of services are offered welfare. Approximately 10% of admitted patients at AKUH are subsidized by 45%, which is insufficient.

The third significant finding was that the length of stay was not decided at the time of admission to hospital. This caused financial problems for patients because prolonged hospitalization impacted on the cost of care.

The fourth significant finding was in the area of accessibility to services. Accessibility indicators for different services validate patients' perception of charges; whenever AKUH charges are higher than the market the satisfaction rating is lower. Fareed (2002) stated that 3.4% of patients from Karachi's upper income segment and 0.9% patients from its lower income segment utilized AKUH services in the 12 month period from 1 July 2000 to 30 June 2001, indicating that the hospital was less accessible for low income patients. The accessibility index is the ratio of AKUH prices to

competitor's prices for most common tests, procedures and services. It indicates the extent to which AKUH's average prices exceed the average competitor's prices for the same service. Wherever AKUH charges were higher than the market, the satisfaction rating was lower. Furthermore, AKUH's competitors were also raising the cost of care and diagnostic procedures without adding any significant quality component to their service. This had an impact on the overall rate of increase of the cost of care for patients attending the AKUH and other competitor institutions.

The fifth issue surrounded promptness of service in the emergency department. Prompt service and immediate attention, especially from senior doctors and consultants on call, was an important issue for 13% of patients.

The sixth concern related to insufficient multidisciplinary collaboration and coordination in care among health team members, which impacted upon patient recovery. In July 1999, a study of the medical unit of AKUH showed that nurses accompanied physicians on rounds for only 13% of their time, while the remainder of the time (87%) was spent on other work. This resulted in lengthy waiting times to complete nursing care. Patients also commented nurses were spending more time on documentation than direct patient care.

In addition to the comments from patients, the nursing management group observed that nursing documentation and physicians' documentation was not integrated. Physicians had their own folders, where the patient's assessment and progress was documented, and nurses had their own folders to document their work. Ninety percent of the time, nursing documents were not referred to by physicians or other health team members. Furthermore, nurses, physicians, and anesthetists had their own assessment forms, which were not known to each other, resulting in mismanagement in patient care. Sometimes patients were even ordered to undergo an investigation twice, resulting in

financial burdens. In spite of three assessment forms, clinical risk assessment was not conducted at all, and, on a number of occasions, high-risk patients were not assessed appropriately prior to surgery.

Clinical caregivers were also dissatisfied and apprehensive. Currently, staff satisfaction at AKUH is not measured, but the recruitment department conducts exit interviews with registered nurses at the time they resign. The main purpose of an exit interview is to discover the reasons for resignation and to avert it, if possible, in order to overcome acute nursing shortages at AKUH. The findings of exit interviews in 1999 and 2000 indicated that registered nurses felt that the workload at AKUH was too high, mainly due to a lack of coordination among health team members, a shortage of staff, and excessive nursing documentation. The nurses suggested that management should increase the number of nurses to overcome staff shortages, and reduce nursing documentation so that nurses could spend more time with patients.

Despite the above-mentioned concerns by patients, the overall patient satisfaction index, monitored by the marketing department of AKUH, remained above 92%, which justifies AKUH as a quality health service provider. This was supported by international agencies that accredited AKUH with an ISO 9002 certification (International Standards for Organization) for the year 2000.

Advantages of Clinical Pathway Model over Traditional Care Model

Access to good health care is a basic human right. Patients admitted to hospitals are already stressed from physical, psychological, and financial pressures. Lack of coordination between health team members, unnecessary delays, lengthy investigations, and absence of quality practices heightens stress and dissatisfaction. The TURP clinical pathway could perceivably replace the currently unsatisfactory practices at AKUH,

providing patients requiring this surgical procedure with an opportunity to increase their satisfaction with the hospital system.

Integrated clinical pathways use a single set of documents—a compilation of all necessary information pertaining to the care of the patient, including the initial assessment—that can be accessed and utilized by all caregivers. This facilitates better communication among health care providers, and enables reviews of each others' assessments, plans of care, and patient progress, thus minimizing variations in clinical practice.

The introduction of clinical pathways can ensure that a comprehensive risk assessment is conducted on all patients to lower the risk of post-operative complications. A clinical pathway of TURP would introduce pre-determined and agreed pre-operative orders, such as pre-operative medications and antibiotics, in a written format, leading to reduced practice delays, reduced practice variations among surgeons, and reduced costs by preventing misuse of medication. Written protocols in the form of a pathway can also serve as a reference guide to new medical and nursing staff, and reduce errors by new employees during their induction period.

A clinical pathway for TURP could also outline all activities, from the decision to operate to the discharge of the patient, within the stated timelines. In the light of these protocols, health care workers from different health providers would be able to provide better coordinated patient care, and reduce delays in its delivery.

The TURP pathway would also allow health care professionals to write patient progress reports on integrated forms, using identical documentation formats. This would prevent duplication, and would also permit health team members to access each other's notes; whereas, traditionally, nurses and physicians have had separate document folders, preventing each other from obtaining a proper update on patients.

The TURP clinical pathway would also enable nurses to comply with the nursing division philosophy, which is to provide safe, competent, and individualized nursing care from admission up to and including discharge. This care also encompasses emotional support, counseling, reassurance, and education to patients and their families. Nurses have a responsibility to create a safe patient environment, to respect the privacy of the patient, to provide patients with accurate information in matters relating to their care, to provide patients with quality care to the level of their knowledge and skill, and to act as the patients' advocate. Furthermore, nurses have the authority and autonomy to make nursing decisions, for which they are accountable. Nursing plays a central role in the delivery of health care to the community while working collaboratively with other health care professionals.

Finally, the implementation of clinical pathways will allow monitoring of variances. Anything that deviates from the written pathway will be considered as a variance. Health care workers will be able to identify variances, explore their root cause, and focus on their prevention in later cases wherever possible so that patient related outcomes are improved.

Rationale of the Study

The primary focus of this investigation is to assess the impact of clinical pathways on clinical quality, cost, and patient and staff satisfaction. Clinical pathways use a multidisciplinary approach to the delivery of patient care; therefore, the researcher saw the value of testing this concept of patient care in her work setting, and, in the event of supportive findings, changing the model of nursing practice at AKUH from the traditional to the multidisciplinary approach.

Given the potential of clinical pathways to improve quality in health care, and given the lack of research in Asia on this topic, an investigation into the effect of

clinical pathways on quality at AKUH is well-justified. A review of recent research literature has determined the importance of clinical pathways in western clinical settings, and their impact on clinical quality and cost reduction (Chang et al., 1999; Chen et al., 2000; Pritts, Nussbaum, Flesch, & Fegelman, 1999). The most significant gap in the literature was the absence of any Asia-specific research studies conducted by clinical nurses and exploring the role of clinical pathways in improving clinical quality, patient and staff satisfaction. This is supported by Ros (2000) who agreed that there is little evidence in the literature of the impact of clinical pathways on patient outcomes, quality of care, structure, and process efficiency. Darer (2002) stated that many hospitals with pathways do not track important clinical outcomes as part of their evaluation practices. However, there is abundant evidence on the cost benefits. Despite the growing popularity of clinical pathways, their impact on clinical outcomes and their clinical effectiveness remains largely untested and unproven through rigorous clinical trials. Much of the research has focused on changes in the process of care delivery rather than on outcomes. Although there have been some published studies that have evaluated the outcomes of clinical pathways, most of these studies (Chang et al., 1999; Chen et al., 2000; Pritts, Nussbaum, Flesch, & Fegelman, 1999) have focused on reductions in length of stay and costs, but have not outlined any particularly significant effects of clinical pathways on clinical quality.

As previously stated, clinical pathways have not been introduced in any other hospital in Pakistan apart from the AKUH. The clinical pathway concept was implemented at the AKUH in 1998 to meet the requirements of the Joint Commission of Accreditation for Health Care Organizations (JCAHO), an accrediting body for health care organizations in the United States, which uses its own set of standards. Although ten clinical pathways were developed by multidisciplinary teams at AKUH, and are

currently in progress, the perceived benefits as outlined in the literature have not yet been achieved. One possible explanation for this could be that the pathways were not developed according to the process advised by the Health Care Advisory Board (1998). As the concept was very new, health team members employed trial and error approaches to its introduction, resulting in less than optimum outcomes, with various health team members questioning whether any benefits would be realized for the patient or for the health provider. It remains to be seen whether a concept developed, applied, and practiced in the western world can improve clinical quality when introduced in the Asian setting of AKUH.

An obvious omission in the literature was any testing of these concepts in other Asian hospitals, or any application of nursing theories as a conceptual framework to test this concept. This study has applied and tested Dr. Imogene M. King's theory of goal attainment to assess the benefits of a TURP clinical pathway on cost, clinical quality, and patient and staff satisfaction. To the researcher's knowledge, this is the first time since their development that clinical pathways have been tested within the framework of nursing theories.

Current nursing philosophy strongly encourages nurses to make a contribution to the overall knowledge base of nursing through research activities (Mateo & Kirchoff, 1997). However, nurses at AKUH, and in other Asian hospitals, do not conduct research studies in their hospital settings; instead, borrowed concepts from western literature are applied in practice without any scientific evidence. This researcher felt it was important, before rejecting or accepting the JCAHO-required implementation of clinical pathways, that their reported benefits were explored in her own clinical setting, as it was economically and culturally different from the western health care settings where the concept had been tested and reported to be effective.

The role of clinical pathways in reducing length of stay and cost of hospitalization has been scientifically tested and proven by various authors in the research literature (Browne et al., 2001; Calhoun, 2000; Healy, 2002). However, other impacts, such as improving clinical quality and multidisciplinary collaboration, enhancing continuous quality improvement, reducing documentation, reducing delays, improving discharge processes, enhancing patient and staff satisfaction, and saving resources and time, have been outlined in empirical literature reviews but not scientifically tested. Furthermore, review of the literature has emphasized the improvement in clinical practice and continuous quality improvement approach to enhance the core processes of patient care, but has not elicited any studies that have tested improvement in other key variables as a result of the introduction of clinical pathways. It was necessary, therefore, to use a holistic approach to assess correlation of all variables with clinical pathways.

The final rationale for this project was to use the findings to help senior management of AKUH appreciate the benefits of clinical pathways. According to Cheah (2000), clinical pathways can be seen as a new paradigm in the provision of cost-effective and efficient healthcare for patients in the near future. AKUH is striving to enhance the clinical quality dimension of patient care and promote access to all socio-economic classes of Pakistan. In order to improve multidisciplinary collaboration and clinical quality and reduce the cost of care, medical and nursing administrators at AKUH have conducted three clinical conferences since 1998 to increase awareness among nurses and physicians of clinical pathways. The supportive findings of this scientific innovation will not only reduce caregivers' apprehension regarding this change, but will motivate them further to replicate the same intervention in other aspects of patient care.

Aims of the Present Investigation

The previous section has established the importance of clinical pathways in health care settings and rationalized the need for the current investigation. The preceding discussion has also highlighted the lack of research in Pakistan and other Asian countries into clinical pathways, and has identified the need for such research to be undertaken to bridge the current practice theory gap. Based on the concepts outlined in the previous section, the following study aims have been formulated.

- To examine whether patients undergoing the surgical procedure of TURP in Pakistan can receive the same benefits from clinical pathways as have been identified in the literature on western health care systems. Underneath this broad aim are two more specific aims.

To improve multidisciplinary collaboration among health team members by streamlining documentation integrating medical and nursing documentation, and by enhancing consistency, continuity and coordination of core activities in delivery of patient care. This integrated clinical pathway will become a powerful audit tool, as care providers will consistently monitor on an ongoing basis all aspects of process and outcome.

- To develop a Clinical Quality (CQ) model to be implemented and subsequently evaluated in clinical practice settings, initially throughout AKUH, with the potential to extend the same clinical model to other hospitals in Pakistan. This aim will be re-assessed after completion of the thesis and will depend on the dissemination of the data to key stakeholders via published papers and conference presentations.

Formulation of Research Questions

To achieve the stated aims, the current investigation will answer the following research questions.

1 What is the impact of clinical pathways on clinical quality (CQ) in patients requiring TURP at AKUH?

2 What is the effect of clinical pathways on variances in all aspects of patient care?

3 What is the effect of clinical pathways on length of stay of these patients?

4 What is the effect of clinical pathways on cost of hospitalization of these patients?

5 What is the effect of clinical pathways on patient satisfaction?

6 What is the effect of clinical pathways on staff satisfaction?

Objectives of the Study

In the health professions, the goal of research is to achieve the best outcome for clients and patients. Considering the stated aims and research questions, the current study focuses on the following five major areas as the study objectives:

1 To measure outcomes and variances of clinical pathways on the clinical quality (CQ) of care for patients attending AKUH for TURP. These variances have been divided into six categories: pre-admission, patient, physician, nursing, hospital, and discharge related.

2 To examine clinical indicators consecutively to evaluate the effect of the implementation of clinical pathways on clinical quality for patients attending AKUH for TURP. The three clinical elements identified as representative indicators of the quality of care are: (a) post-operative problems; (b) post-operative complications; and (c) other indicators, such as surgery after hospital day two, intravenous fluid administration for more than two days post-operatively, intravenous antibiotic administration for more than two days post-operatively,

hospital inpatient mortality, and re-hospitalization within thirty days time after discharge.

3 To measure length of stay as per plan, variances in financial charges to patients undergoing TURP, and the overall cost of their hospitalization. To achieve this objective, the total admission charges were divided into ten categories: bed charges, attendant fee, surgical fees, anesthesia charges, special consultancy charges, pharmacy charges, medical/surgical supplies charges, diagnostic charges (laboratory and radiology), operating room charges, and other charges. Differences in charges for these categories were determined before and after the implementation of clinical pathways. Length of stay was measured as a financial indicator, because any reduction in length of stay would have an impact on staff costs, materials costs, and overall costs of hospitalization.

4 To assess the impact of clinical pathway intervention on the patient satisfaction level of the two study groups (experimental and control).

5 To assess the impact of clinical pathway intervention on all health team members who were involved in providing care to the two study groups of patients.

Formulation of Research Hypotheses

Research hypotheses are general predictions by the researcher that can be tested by measuring individuals or samples (Minichiello, 1999). The current investigation tested the following hypotheses:

- Patients managed utilizing clinical pathways will have improved quality outcomes compared to patients managed utilizing traditional methods and routine practices.
- Patients managed utilizing clinical pathways will have fewer occurrences of variances than patients managed utilizing traditional methods and routine practices.

- There will be an improvement in clinical indicators, as stated in objective two, in patients managed utilizing clinical pathways compared to patients managed without utilizing clinical pathways.
- Patients managed utilizing clinical pathways will have decreased length of stay compared to patients managed without utilizing clinical pathways.
- Patients managed utilizing clinical pathways will incur less cost for hospitalization than patients managed without utilizing clinical pathways.
- Patients managed utilizing clinical pathways will demonstrate more satisfaction with their clinical management or experience of hospitalization than patients managed without utilizing clinical pathways.
- Staff (health team members) caring for patients on clinical pathways will demonstrate more satisfaction than staff caring for patients not on clinical pathways.

Identification of Assumptions

The following study assumptions arise from the current investigation:

- Staff would understand and utilize the philosophy related to clinical pathways.
- Staff would accept clinical pathways as an alternative to traditional ways of caring for patients undergoing TURP.
- Staff would ensure that regular feedback was provided on variances, and, if appropriate, changes based on those variances would be incorporated into the clinical pathways.

Overview of Thesis

The first chapter identifies the need for research into the implementation of clinical pathways in the health care system of Pakistan, and discusses the significant role of clinical pathways in improving clinical quality. The chapter also identifies the perceived

benefits of replacing the traditional practice model with the clinical pathway model for the TURP surgical procedure at AKUH. Previous research relating to clinical pathway implementation is also presented, and the rationale and specific aims for the study are provided.

Chapter Two extends the literature review commenced in the first chapter, and presents an extensive overview on the impacts and benefits of clinical pathway in health care settings. The literature review demonstrates that clinical pathways reduce length of stay, cost of care, improve clinical quality, and enhance patient and staff satisfaction. One of the key aims of the literature review was to outline the process of developing, implementing and evaluating clinical pathways in health care settings so that maximum benefits can be achieved. Another important aim was to emphasize the role of multidisciplinary collaboration in improving health care outcomes for patients and their families.

Chapter Three locates and describes an appropriate conceptual framework to inform and guide the study. King's interacting systems framework and theory of goal attainment is presented as the most effective, and discussion in the chapter argues that the application of clinical pathways replaces traditional nursing practices and facilitates critical thinking, as promoted in King's theory.

Chapter Four focuses on developing a research design that has the potential to meet the overall aims of the study effectively. The quasi-experimental type design with non-equivalent groups is discussed as the most appropriate to address the research questions, objectives and hypotheses. This includes description of design and research setting, sample and ethical considerations, operational definition of variables under investigation, development of the research instruments, and confirmation of their

validity and reliability. The chapter concludes with a discussion on the implementation phase and data collection process of the current investigation.

Chapter Five commences with the report of the findings of the different study variables. The results are presented in the context of the research objectives and hypotheses outlined in Chapter One. Tables and figures are used to illustrate and summarize data for presentation.

Chapter Six discusses the study findings, with the aim of developing an interpretation of the findings that accurately reflects the core descriptions, issues, and insights that have been presented throughout the study.

Chapter Seven, the final chapter, presents the conclusions drawn from the study, and makes recommendations that contribute to the professional advancement of collaborative nursing practice via the use of clinical pathways. The chapter concludes with the researcher's final reflections on the project.

Conclusion

In this chapter, the need for conducting this research study at AKUH was determined. Also discussed was the importance of such a study in Pakistan, as well as the highly significant role of clinical pathways in improving clinical quality. The concept of clinical pathways is an innovative method of improving multidisciplinary collaboration, reducing variation in clinical practice, and improving health-related outcomes for patients and satisfaction levels of staff and patients was argued. The perceived benefits of the development of the TURP clinical pathway in the AKUH setting (replacing the traditional practice model) were identified. The final section of this chapter presented the major aims of the study, along with study objectives, research questions, research hypotheses, and study assumptions.

The discussion in the following chapter presents background information relevant to the present investigation, including a detailed historical account of the evolution of clinical pathways and their impact on study variables. The discussion in the next chapter also traces the process of development and evaluation of clinical pathways. Furthermore, the chapter presents a detailed literature review regarding all study variables.

CHAPTER TWO
LITERATURE REVIEW

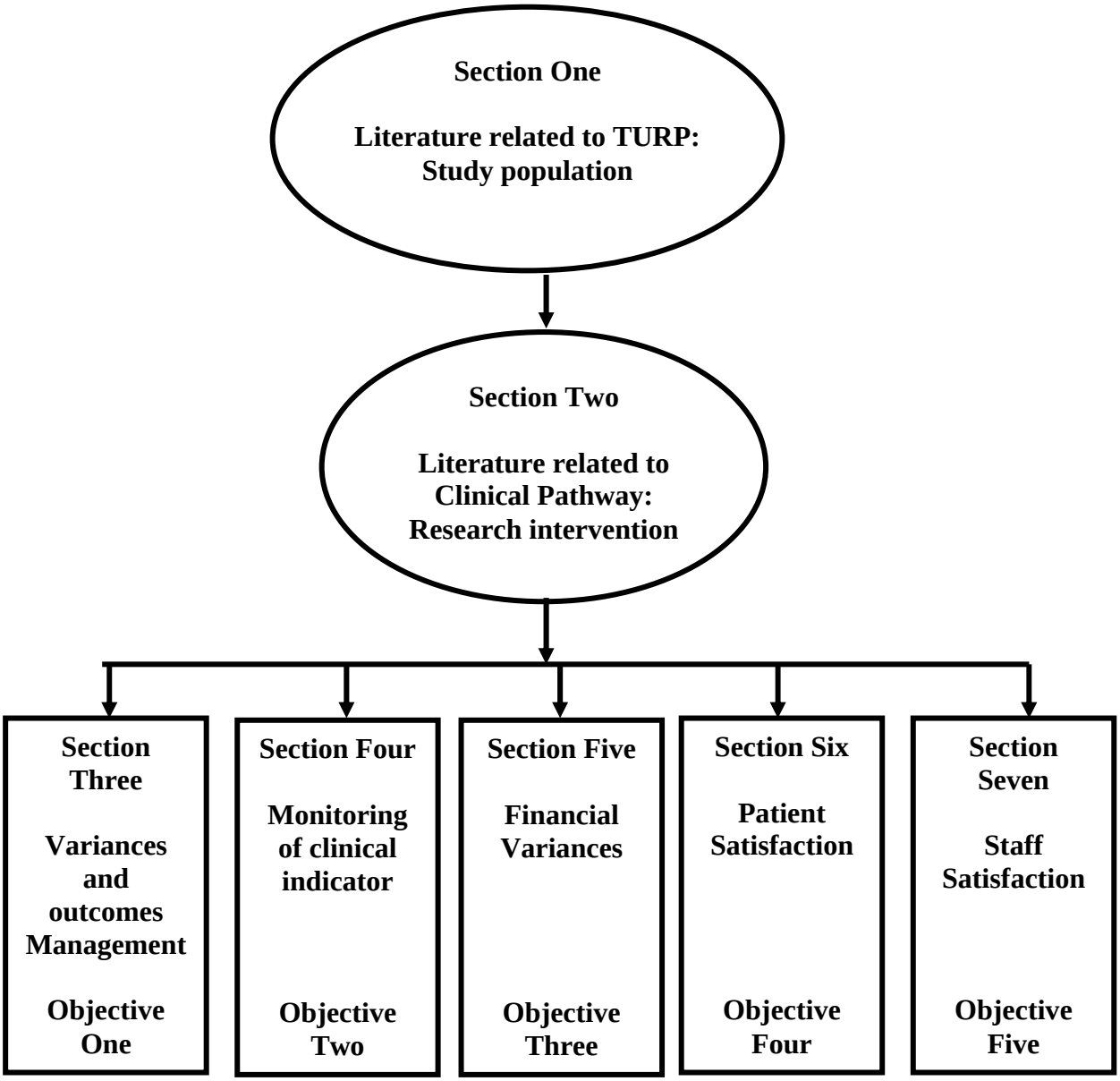
Introduction

As highlighted in the previous chapter, the focus of the current investigation is to explore the impact of clinical pathways on clinical quality, cost, and patient and staff satisfaction. The previous chapter also highlighted that the primary aim of this project is to examine whether patients undergoing TURP in Pakistan can achieve the benefits of clinical pathways as reported in the literature in western health care systems. This chapter provides a comprehensive overview of empirical as well as theoretical literature on all concepts relevant to the current investigation.

Clinical pathways are multidisciplinary plans. They have become popular in western health care systems due to their effect in reducing both length of stay and cost of care. Clinical pathways provide a coordinated model for managing patient care during hospitalization and can also be used for effective discharge planning. In its most refined form, a clinical pathway model can span the entire continuum of care. In addition, pathways can be used as preventive tools in acute care and outpatient settings as well as in home care, rehabilitation, mental health, and other extended care settings. The Health Care Advisory Board (2003) report stated that approximately 60% of US hospitals use interdisciplinary clinical pathways as a means of standardizing care and resources for certain diagnoses, particularly those exhibiting few co-morbidities, a narrow range of symptoms/conditions, and a relatively predictable course of care.

The aim of this literature review is to acquire some insight and understanding into the concepts and variables that are to be scientifically tested in the current investigation. It is divided into seven sections, as illustrated in Figure 1, with a brief overview of the importance of each section presented at the beginning of each section.

Figure 1. Presentation of literature related to investigation



Section One: Literature on Transurethral Resection of the Prostate

This section summarizes a comprehensive literature review regarding TURP, outlining the medical reasons for TURP, indications, contraindications, advantages, disadvantages, post-operative complications, and clinical management of the patient pre-operatively and post-operatively. The importance of this section is that the clinical pathway of TURP is designed from literature reviews. The literature emphasizes that clinical pathways should be designed from the current literature to make them evidence based, allowing continuous assessment of process and outcome in clinical practice against the evidence. Kitchiner, Davidson, and Bundred (1996) agree that improvement in the quality of care is achieved by frequently revising the clinical pathway on the basis of current best practice, which allows patients on clinical pathways to receive the best care. The literature presented and discussed in this section will assist the reader to understand the concepts discussed in the data analysis chapter as research variables.

The clinical pathway for TURP (Appendix C) has been derived from an extensive literature search of issues relating to the management of patients undergoing this procedure. The clinical pathway is described in a comprehensive multidisciplinary document of forty-seven pages, which serves as the only document in clinical practice, and which eliminates all other forms of documentation. Page 1 is an introductory page, consisting of information regarding length of stay and contact numbers of health team members responsible for the management of patient care. Pages 2 to 12 are related to comprehensive risk assessment and initial assessment of the patient to enable health professionals to appropriately deliver the clinical practice during and after the surgery. Page 13 is a surgical checklist, and page 14 covers pre-operative management of the patient at the pre-admission clinic and important activities performed on the admission day. Pages 15 to 23 cover pre-operative orders and nursing and physician notes. Page 24

consists of activities on the day of surgery, followed by operation notes and post-operative orders. Page 27 outlines activities performed during the immediate post-operative period and first post-operative day. Subsequent pages of the clinical pathway consists of documentation formats for post-operative management, day to day nurse and physician notes, vital signs, flow sheets and, finally, clinical variances and their operational definitions. The following section of the literature review will discuss the literature related to TURP surgical intervention utilized in the design of clinical pathway.

TURP surgical intervention is a choice of surgery for enlarged prostate (Wilson, 1997). The prostate is a complex organ consisting of acinar, stroma and muscular elements. It starts to develop at the 12^{th} week of fetal life under the influence of androgenic hormones. The normal prostate measures between 3–4 cm at its widest portion, 4–6 cm in length, and 2–3 cm in thickness. From the time of birth until puberty, there is little change in the size of the prostate. At puberty, a rapid increase in size occurs that continues until after the third decade is reached (Walsh, 1992). Prostate growth at this time increases at the rate of 1.6 g per year. Thereafter, prostate growth markedly decreases to 0.4 g per year in men aged 31 to 90 years (Walsh, 1992). The size of the prostate variably increases in benign prostate hyperplasia (BPH), which is the most common benign condition in men, and which has been known for several centuries (Tanagho, 1995).

TURP surgical intervention is the best choice for treating BPH. Mueller (2002) stated that TURP has been considered the “gold standard” treatment for bladder outlet obstructive symptoms secondary to benign prostate hyperplasia. Resneck and Thomson (1998) stated that, despite the changing pattern for BPH management, TURP remains the standard of treatment against which all others must be compared. BPH becomes a

disorder when enlargement obstructs the urinary channel and causes changes in the urinary tract with associated manifestations (Black, Hawks, & Keene, 2001). Benign prostatic hyperplasia is responsible for urinary symptoms in the majority of men older than 50 years of age (Walsh, 1992).

To complete the risk assessment and initial assessment on patients with TURP, the health team members must have a good knowledge of signs and symptoms and pre-disposing factors of BPH. Religo and Larson (1994) stated that the symptoms of BPH are divided into two categories: obstructive or irritated. Obstructive symptoms are weak stream, hesitancy, intermittency, incomplete bladder emptying and terminal dribbling; irritated symptoms include frequency, nocturia and urgency.

The advantages of TURP are that it is safer for those who are at high risk for general anesthesia, and for cardiac patients. Furthermore, surgical incision is not necessary, and hospitalization is shorter than for any other type of prostatecomy. In most of the cases, patients require hospitalization for four to five days.

PATIENT PREPARATION

To complete the surgical checklist and ensure that the patient is physically well prepared for surgery, it is important for the nurse to be knowledgeable regarding patients preparation undergoing TURP surgical intervention. Most patients who require transurethral prostatic surgery are in the older age group; therefore, their general condition requires careful evaluation and examination prior to the operation. It is important for medical and nursing practice to pay proper attention to the patient's cardiovascular, respiratory, hepatic, and neurologic systems before transurethral surgery is undertaken.

According to Wein (1995), prolonged urinary tract obstruction will produce renal insufficiency. Although repeated catheterization frequently causes urinary tract

infection, pre-operative catheter drainage is indicated in the presence of a large amount, over 200 ml, of residual urine to improve renal function prior to operation. Diabetes mellitus must be brought under control before surgery. When Kimmelstiel-Wilson's disease with renal insufficiency is documented, transurethral resection may be undertaken only if the blood urea nitrogen and serum creatinine levels are stabilized at the lower levels. Resnick and Thomson (1998) stated that if the patient is receiving anticoagulant therapy for the treatment of cardiovascular disease or an old cerebrovascular accident, the medication should be discontinued for at least 5 days before surgery. If the patient has a history of a bleeding diathesis or if there is a family history of a bleeding tendency suggesting hemophilia, a complete hematologic workup should be carried out. Transurethral resection is not recommended in the patient with bleeding tendencies of any type.

POST-OPERATIVE COMPLICATIONS

It is important for health care workers to be aware of and recognize occurrences of post-operative complications in TURP patients. Complications such as excessive bleeding, low-sodium syndrome, hypotension, renal insufficiency, and respiratory distress are the common post-operative complications. Resnick and Thomson (1998) stated that common complications occurring with TURP are incontinence, urethral stricture, bladder neck contracture, and impotence. Therefore, it is very important for health care workers to be alert and active in post-operative management of TURP. According to Wasson (1998), post-operative nursing interventions involve assessing the urinary catheter for patency and blood loss every one to two hours. Initially, the nurse may see red-tinged urine that fades to pink within 24 hours. The nurse monitors for signs of excessive blood loss—for example, rapid pulse and decreasing blood pressure—and checks intake and output every one to two hours.

Wilson (1997) stated that if blood clots impede adequate catheter drainage, gentle irrigation is performed with saline solution. Therefore the nursing interventions are focused on management and prevention of complications. Wilson (1997) and Gray (1998) stated that blood counts, serum electrolytes, and arterial blood gas levels should be monitored in poor-risk patients as soon as the endoscopic procedure is completed. Gray (1998) stated that the patient should be free of pain, apart for mild discomfort in the urethra. A new severe pain is a sign of a complication that must be treated immediately. Holtgrewe (1995) stated that, in most cases, pain is a symptom of bladder distension due to catheter obstruction with blood clots; it may also signal a perforation of the prostatic capsule or bladder wall. Prompt action should be taken to treat the appropriate problem. Excessive blood loss should be replaced with blood transfusions. Wasson (1998) stated that appropriate amounts of 5 to 10% sodium chloride should be added to the intravenous fluids to correct hyponatremia. When urinary infection exists prior to the operation, culture and sensitivity tests are performed to identify the invading organism. Appropriate antibiotics to treat the existing infection should be started before, and continued during, the transurethral procedure. Catheter care to keep the lumen open and draining is an important principle of post-operative care.

Post-operative hemorrhage is adequately controlled by evacuating blood clots from the bladder and prostatic fossa. This allows contraction of the prostatic capsule and bladder neck which, in turn, discourages further bleeding. Use of a continuous irrigation system with a three-way catheter, 22 to 24 gauge French, is sometimes quite useful. As a rule, patients are permitted out of bed the day after transurethral resection, unless there is a danger of excessive bleeding. It is advisable to have the patient out of bed, sitting quietly in a chair. The patient is permitted to walk as soon as the danger of hemorrhage has passed. The indwelling catheter is removed in three or four days when

macroscopic hematuria has disappeared**.** Premature removal of the catheter sometimes encourages significant hemorrhage (Wilson, 1998).

The rapid transfer of large amounts of irrigating fluid to the bloodstream during transurethral resection will produce systemic complications such as hypervolemia and hyponatremia. If the operation is prolonged and there are additional complications, such as excessive hemorrhage and prolonged anesthesia, the patient may develop circulatory failure (Black, & Matassarin-Jacobs, 1997).

DISCHARGE PREPARATION AND TEACHING

Preparation for discharge is a very important component of patient care, and should be followed as cited in the designed clinical pathway. According to Ignatavicius, Workman, and Mishler (1995), a set of specific discharge instructions should be given to the patient on self-monitoring of the urinary system, and the patient may be asked to keep a voiding record to note the character and volume of urine and the frequency of urination. Furthermore, patients should be instructed to rest for two to six weeks, and avoid strenuous activities such as driving. In order to enable the surgical site to heal properly, patients should be advised on common activity restrictions during the post-operative period, such as no lifting of more than 2.25 kg, no excessive physical exertion, no long walks, and no driving of a vehicle. If the urine turns bright red, instruct the patient that they should rest, drink more clear fluids, and, if the bleeding does not subside within one to two hours, notify their physician,

Discharge instruction should also include dietary advice, as nutrition is an important aspect of the patient's discharge planning. Instruct the patient to avoid the consumption of alcohol, caffeine, and spicy foods that could over stimulate the bladder. The importance of drinking 2500–3000 ml of fluid daily cannot be overemphasized, as the increased level of fluids helps in clearing the urine, passing the remaining clots, and

preventing infection. A high-fiber diet is important to prevent constipation and reduce hemorrhage that may result from increased pressure on the pelvic muscles. Another aspect of home care instruction involves meticulous perineal hygiene to minimize the risk of infection. Discharge teaching should also include an instruction to the patient to take prescribed antibiotics at regular times until the course of medication is completed to reduce the risk of urinary sepsis (Gray, 1998).

Post-operative exercises are an important part of the discharge instruction, and the most important exercises for the patient are Kegal exercises to strengthen and tighten the pelvic floor muscles. The patient is taught to tighten the pelvic muscles, without tightening the thigh or abdominal muscles, 35 to 50 times in ten minutes. These exercises reduce abnormal detrusor muscle contractions by decreasing bladder pressure. The long-term patient management after TURP involves ongoing assessment of sexual and urinary function; assessing self-esteem and sexuality is critical as optimal erection function and changes in libido may take 12 months to resolve (LeMone & Burke, 1996).

Despite the excellent results obtained from TURP, it has been criticized as a less effective treatment when managing symptoms such as hemorrhage and infection, taking the cost and hospital stay into account. Therefore, TUVP (transurethral electro vaporization of the prostate) has been introduced for mild to moderate symptoms. It should be emphasized, however, that TUVP should be viewed as a modification of a common method of TURP (Kaplan & Te, 1995).

SUMMARY

This section has shown that TURP is considered a common method of treatment for acute urinary retention and for severe symptoms due to BPH. Furthermore, it has discussed that patients should be assessed critically pre-operatively, and comprehensive care should be provided post-operatively, in order to prevent complications such as

excessive bleeding, low sodium syndrome, hypotension, renal insufficiency, respiratory distress, pain, and perforation of the prostate. The section has also discussed the role of discharge teaching and preparation for home management in the patient's safe recovery from TURP surgical intervention.

Section Two: Literature on Clinical Pathways

This section discusses the literature related to clinical pathways with the purpose of exploring those concepts, research studies, and theories that are of particular relevance.

The historical development of clinical pathways, nationally and internationally, argues in favor of clinical pathways. The following review of the empirical literature included studies that examined the conceptual definitions of clinical pathways, the role of clinical pathways in quality improvements, the process of developing clinical pathways, and the characteristics of a good clinical pathway. This is followed by a review of research-related literature that demonstrates the impact of clinical pathways on length of stay, cost, and clinical quality in some western hospitals. The literature also outlines that outcomes of clinical pathways depend on whether they are developed and evaluated appropriately using literature-based guidelines.

HISTORICAL DEVELOPMENT

The application of clinical pathways as a clinical process improvement tool is relatively new, but is gaining in popularity across hospitals and various health care organizations in the United States, Australia, the United Kingdom, and Singapore (Schwoebel & Jones, 1999). Although Hoxie (1996) has implied that healthcare practitioners have used clinical pathways of care since the 1800s, the most significant application of clinical pathways in health care first emerged in 1985 from Boston's New England Medical Center. This early model of a clinical pathway was primarily the initiative of nursing staff and the case management group (Griffin, 1994; Pharm, 1997).

Clinical pathways are derived from the concept of critical pathways, first implemented in engineering fields to maximize efficiency in resource allocation, and to provide guidelines for timely job completion. In the mid-1950s, the critical pathway model of project planning was developed to manage annual maintenance work in an oil and chemical refinery. In industry, it proved to be a valuable tool for charting projects that require the coordination of hundreds of separate contractors (Schwoebel & Jones, 1999).

In the mid-1960s, the health care system in the United States changed upon the implementation of Medicare. Diagnosis Related Groups (DRGs) emerged as a mechanism for prospective reimbursement, and the traditional retrospective payment based on length of stay (LOS) met its demise in the 1980s. This change forced health care institutions to reduce overall LOS in order to remain financially viable. As a result of the change, third party reimbursement grew, leading to an increased emphasis on cost containment and efficient resource utilization. Third party payers noted that in one hospital setting, fewer laboratory tests or x-rays were needed for the given patient than a similar patient in another setting.

In the 1970s, the concept of inpatient case management through the use of critical paths was introduced at the New England Deaconess Hospital, and in the mid-1980s, clinical pathways evolved in the US to meet the changing needs of healthcare delivery systems (Allen, 1997). In the early 1990s, clinical pathways were introduced in the United Kingdom at primary, secondary and tertiary care centers (Kitchiner & Bundred, 1999).

According to a 1996 survey, more than 90% of acute care hospitals in the United States were involved in some type of clinical pathway development or application (Brown, Griepp, Buckley, James, & Vandermolen, 1998). The latest national survey

conducted in the United Kingdom showed that in 1998 approximately 250 National Health Service (NHS) organizations were either developing or using clinical pathways (Luc, 2000). Clinical pathways have advanced in Australia partly due to attendance by physicians and medical administrators at seminars in the U.S. in the early 1990s (Scott, 1997). Choo and Cheah (2000) stated that implementation of clinical pathways in Changi General Hospital in Singapore reduced costs, shortened average length of stay, increased cross-disciplinary communication, empowered nurses to keep patients and their families apprised of planned intervention, and improved consistency of care and practice patterns.

ARRIVING AT A DEFINITION

The definitions surrounding clinical pathways provided by various researchers are consistent and are outlined in this section. Kitchiner and Bundred (1999) defined clinical pathways as a tool that sets locally agreed clinical standards based on the best available evidence for managing a specific group of patients with a specific condition. Baird (1997) defined a clinical pathway as a multidisciplinary plan of care written by teams looking after a particular case, a management tool, and a process approach. The National Pathway Association (NPA), which was founded in 1994 with the aim to act as a national resource organization in developing clinical pathways in England and Wales, offers the following definition based on a consensus view of the NPA membership: “An integrated care pathway determines locally agreed, multidisciplinary practice based on guidelines and evidence where available, for a specific patient/client group. It forms all, or part of, the clinical record, documents the care given and facilities the evaluation of outcomes for continuous quality improvement” (Currie & Harvey, 1998, p. 35).

The above definition has proposed a broader view, which has given a complete picture comprising all essential components of clinical pathways. Campbell (1998)

described integrated clinical pathways as structured multidisciplinary care plans, which contain details of essential steps in the care of patients with a specific clinical problem. They are also a means of improving systematic collection of data for audit, and of promoting change in practice.

A definition put forward by Schwoebel and Jones (1999) has captured the same complexities of clinical pathways. According to them, the clinical pathway is an interdisciplinary perspective to identify expectations of patient care, events that are critical to appropriate length of stay, and methods of improving the quality and cost effectiveness of patient care delivery. Accordingly, they consider it as a tool for coordinating patient care and providing the details of daily care for a specific diagnosis or gestational age. It is a guide to usual treatment patterns, providing visualization and reducing variation of the whole picture. Hoxie (1996) introduced the other aspect of clinical pathway and stated that a clinical pathway represents a continuum of care that identifies structures (institutions, facilities, etc.), caregivers (clinical professionals) and processes (treatment paradigms) that intervene at critical points to efficiently treat the patient and achieve a defined outcome. Forkner (1996) stated that clinical pathways are road maps that identify expected patient outcomes, associated care provider interventions, and expected treatment time.

Finally, it is apparent from these definitions that the clinical pathway is an ongoing evaluation and audit on the patient's progress and outcomes. Frasca (1999) and Barnes (2000) stated that outcomes of clinical pathways will only be achieved by conducting chart audits, collaborating with hospital staff, obtaining physician support, developing documentation tools, measuring outcomes, keeping communication lines open, and conducting ongoing education for the multidisciplinary team as well as for patients if required.

Although many definitions are used, they share common elements, including that clinical pathways promote coordination in patient care delivery for a specific subset of patients through the use of standardized interdisciplinary processes. Interventions are predictably sequenced, based on a timeline of either time or outcomes, directed at achieving specific patient outcomes within a specified period of time, and allowing continuous audit on core processes of patient care.

In reviewing the literature related to clinical pathways, the researcher came across a number of other terms which are often used interchangeably with clinical pathways. These include critical pathways, clinical maps, care maps, clinical guidelines, clinical protocols, standards, and practice parameters. Birdsall and Sperry (1997) suggest that, “Clinical pathways, and some care maps are phrases used interchangeably to describe a pre-determined written plan of care for a particular health problem” (p. 2). Hoxie (1996) stated that clinical pathways are known by a variety of terms, such as practice guidelines, clinical protocols, parameters, and benchmarks.

Herring (1999) stated that clinical pathways are considered as multidisciplinary guidelines, and are an opportunity to revisit the nursing process and nursing models. However, the recent report by the Health Care Advisory Board (2003) has clearly stated that they are different from clinical guidelines, clinical protocols, standards and practice parameters, due to having distinguishing characteristics, such as comprehensive design, which allows integration with medical records, replacing other documentation entirely; specific timelines, sometimes in hourly increments for indicated actions; identification of specific actions and expected intermediate outcomes that serve as performance checkpoints for the patient on the clinical pathway; multidisciplinary approach in development and design phase, user friendly scope of implementation; and, typically, a

focus on the quality and efficiency of care after decisions have been made to admit the patient or perform the procedure.

Klazinga (1994) has further defined that clinical guidelines are systematically developed statements, which assist clinicians and patients in making decisions about appropriate treatment for specific conditions. He agreed that the primary goal of clinical guidelines is to improve quality of care. Huttin (1997) has also stated that clinical guidelines are statements of best practice in specific clinical care. They are supported by research-based evidence usually with meta analysis or consensus statements. Often guidelines are national or international in origin, and they may allow for choice of 'best' actions dependent on individual patient conditions. The development, publication and maintenance of guidelines remain the responsibility of the appropriate professional body, be it medical, nursing, dental or other. The clinical guidelines should aim to be valid, reproducible, reliable, cost effective, representative, clinically applicable, flexible, clear, and revisable. Finally, according to Nish (2000), the use of integrated pathways facilitates the development and implementation of multidisciplinary guidelines.

Clinical guidelines aim to enforce professionalism, as well as accountability and efficiency, when developed as an integral part of professional quality assurance activities. The important and explicit aspect in this definition is that guidelines are to be a support system in the decision-making process, not only for the clinician, but also for the patient. Therefore, the most recent efforts at developing such systematic information systems try to include and integrate patients' values and judgments in the clinical decision-making process.

To overcome the above confusion in terminology, the Health Care Advisory Board (2003) reached a consensus on key terminology associated with the development

of clinical pathways. Several relevant terms are defined below, as provided by the aforementioned article.

Clinical practice guidelines: Recommendations for patient management that may identify a particular management strategy or a range of such strategies. Clinical practice guidelines are typically developed by a panel of nationally recognized experts and endorsed by a national agency (e.g., the Bethesda, Maryland-based Agency for Health Care Policy Research).

Standards: Professionally developed expressions of the range of acceptable deviation from norms (i.e., numerical or statistical measures of usual observed performance) or criteria (i.e., predetermined elements against which the quality of medical services may be compared).

*Practice parameters***:** Strategies for patient management developed to assist physicians in clinical decision-making and including clinical guidelines. Practice parameters are typically developed by a medical specialty society and occasionally are endorsed by state agencies.

The above discussion clarifies the concepts and terminologies used interchangeably with clinical pathway by stating that clinical pathways are descriptions of key events in the process of patient care that the physician and other members of the patient care team believe will reduce variation in patient management practices, with the aim of improving the quality of care and reducing costs.

IMPACT ON VARIABLES

The current investigation aimed to test the impact of clinical pathway on variance management, clinical quality, length of stay, financial management, patient satisfaction and staff satisfaction. The following section of the research literature presents a detailed overview of those studies conducted that focus on the variables in the current

investigation, stating the impact of clinical pathways on these variables. It has been stated that the use of clinical pathways in health care setting reduces length of stay, decreases the cost of hospitalization, improves multidisciplinary collaboration and improves the standards of practice. Research related literature is only available on the impact of clinical pathways on reducing length of stay, decreasing cost of care and to some extent improving clinical quality; however, the other impacts of clinical pathways such as improved patient satisfaction, staff satisfaction, improved multidisciplinary collaboration and decreased resource utilization have not been widely tested scientifically.

Cost and Length of Stay

The major focus of previous studies investigating the benefits of clinical pathways has been on reducing cost and length of stay (LOS). Research studies have shown that cost saving is correlated with the implementation of clinical pathways frequently through reduction of length of stay. However, few studies have produced quantifiable evidence to link pathways with cost saving. The most common settings for these studies have been hospitals, and the most likely outcome reported was impact on decreased length of stay and savings in the cost of hospitalization.

Chang Gung Memorial Hospital used 18 clinical pathways for urological procedures, and of a total of 1,784 patients who underwent urological surgery, 77.5% (1,382) were treated utilizing clinical pathways. The LOS of these patients was reduced significantly by 11% (from 5.5 to 4.9 days), admission charges were reduced by 12.9%, and average hospital charges decreased significantly by 12.9% following implementation of clinical pathways. They also tested variances, and found that variances from clinical pathways occurred in 543 cases (39%), of which 30.8% were patient-related variances (Chang, Wang, Huang, Hsieh, Tsui, & Lai, 1999).

John (2003) stated that the implementation of clinical pathways saved the Children's Hospital in San Diego US$5.2 million in treatment costs from its medical operations in six years. Healy (2002) reported that the implementation of a clinical pathway for knee implant standardization reduced length of stay from 6.8 days to 4.2 days, and hospital costs were reduced by 19%. Calhoun (2000), in her cohort study, found a statistically significant difference in LOS for vaginal delivery patients, resulting in a cost reduction from US$3.2 million to $2.4 million due to utilization of clinical pathway.

Browne, Giles, McCaskill, Fasher, and Lam (2001) reported that clinical pathways were used for managing acute pediatric illness in the emergency department of the Children's Hospital in Westmead, Australia. They found that the admission rate was reduced almost threefold (9.1% compared to 23.6%) with a twofold reduction in length of hospital stay (32.7 hours compared to 17.5 hours). Furthermore, 36% percent of children on clinical pathways made an unscheduled medical visit to the emergency department after discharge, compared to 49% of children who were not on clinical pathways. No adverse events were reported in these children, and high parental satisfaction was reported for clinical pathways throughout the study.

Staff at the University of Texas Hospital made similar observations after they implemented clinical pathways for head and neck oncology surgery. They found that the development and implementation of clinical pathways played a statistically significant role in decreasing length of hospital stay and total cost of care associated with neck dissection. The LOS decreased from 4.0 to 2.0 days. The cost of care decreased from US$8459 to US$6885, giving a 19% reduction in the clinical pathway group compared to the non-clinical pathway group. They also measured clinical indicators, such as complications of surgery and readmission rates. They identified that readmission and

rate of complications did not differ in pathway and non-pathway groups (Chen et al., 2000). Healy (2002) discovered that the clinical pathway and knee standardization program reduced average length of stay from 6.79 days in 1992 to 4.16 days in 1995.

On other hand Bailey, Wingarten, Lewis, and Mohsenifer (1998) made different observations. In their study on clinical pathways for bronchial asthma, they found that there was no significant difference in LOS between the clinical pathway and non-clinical pathway groups, however there was a substantial annual cost saving of US$2.8 million by the use of clinical pathway for bronchial asthma. This saving was, however, associated with a significant increase in hand-held nebulizer to metered dose inhaler conversion.

The Health Care Advisory Board (1998) drew attention in its report on research studies to similar concepts in U.S. hospitals. One hospital, which developed algorithms of clinical pathways for diagnoses, reported a saving of US$2.7 million, a 35% reduction in the total direct cost to the institution. At a second hospital, clinical pathways reduced LOS and enabled orthopedic surgeons to reduce the number of autologous units of blood from 4 to 2 for hip surgery, and from 2 to 1 for knee surgery, resulting in significant financial savings to the patients.

Another interesting observation made by the Health Care Advisory Board (1998) was that a change in process of care can also lead to reduced financial impact on patients. In addition, more specific troponin and myoglobin were substituted by using clinical pathway for chest pain, bringing total annual cost savings to about US$25,000. Balesky and Provenzano (1995) found that the implementation of a clinical pathway of chronic heart failure reduced the average LOS for patients from 6.5 to 5.7 days, and was accompanied by a per patient cost saving of US$3,100.

Bankhead (1996) discovered that using a clinical pathway for radical prostatectomy reduced costs by 44%, and by 40% for radical cystectomy. Comrried (1996) found that using a cesarean section clinical pathway resulted in a 13.5% reduction in an average LOS and a 13.1% reduction in costs per patient, amounting to an annual cost saving of US$145,000. Weilitz and Potter (1993) discovered that a chemotherapy clinical pathway decreased the average LOS from 5.89 to 4.34 days and reduced the cost per case by 25%.

Calligaro, Dougherty, and Raviola (1995) stated that a principal method used to decrease hospital costs is the reduction of inpatient days, which is achieved through the utilization of clinical pathways. Organizations unable to deliver health care at a lower cost will ultimately lose potential patients to less expensive competing hospitals.

Implementation of clinical pathways produces significant decreases in LOS and costs in the clinical pathway group compared to the non-clinical pathway group (Pritts, Nussbaum, Flesch & Fegelman, 1999). Johnson, Blaisdell, Walker, and Eggleston (2000), in their randomized controlled study conducted at Johns Hopkins Hospital, found that clinical pathway utilization for inpatient asthma decreased LOS in the intervention group by 14 hours compared to the control group, and the intervention group received less nebulized B-agonist therapy. A pediatric study conducted with 110 children hospitalized with asthma exacerbation who were treated using the clinical pathway showed they were almost twice as likely to be discharged within 24 hours compared to children who received standard medical care.

The Health Care Advisory Board (1998) report noted that a hospital in the United States used a clinical pathway in the treatment of 250 tuberculosis patients. They discovered readmission rates fell from 12% to 2%, resulting in a reduction in average costs from US$24,221 in 1993 to under US$20,000 in 1995.

It is clear from the findings of the above studies that researchers were focusing specifically on cost reduction. Their focus was to decrease the LOS in order to reduce cost burdens on hospitals and their patients.

Quality of care

As stated earlier, very little research literature is available on the impact of clinical pathways on quality of care. A study by Dufault and Lessne (1999) found that clinical pathways were effective in reducing pain intensity and improving quality of life. Results showed that patients treated using a clinical pathway had less pain during their hospitalization. Kevin, Carol, Allen, and Peyton (2000) reported that using a clinical pathway for asthma management decreased the beta-agonist medication use for inpatients with asthma.

Luc (2000) in her study on breast care clinical pathway found that five out of 12 clinical indicators showed change, two clinical indicators showed statistically significant changes, and five of ten clinical indicators showed positive changes in maternity clinical pathway, four showed statistically significant changes. However her published study did not specify which clinical indicators were measured.

Kasper (2002) discovered that there were fewer heart failure hospital admissions or deaths over six months using the care pathway (49% versus 73%). Patients in the care pathway group were more likely to hit targets of treatment (weight, diet, vasodilators), and have stable or improved symptoms.

Calligaro et al. (1995) introduced a broader view of the concept of quality care. They found that following the implementation of a clinical pathway for vascular surgery, admissions on day of surgery showed a significant increase, from 8% to 62%. Furthermore, there were significant differences in overall mortality rates, cardiac, pulmonary, and neurogenic complications, and readmissions within 30 days. They

concluded that same day admission and early hospital discharge for patients undergoing elective major vascular surgery can result in significant hospital cost savings without an apparent increase in the morbidity and mortality rates.

Denise (1996) shared her experiences of clinical pathway utilization at St. Joseph's Hospital in London where surgical complication rates for hip and knee replacement were much lower than the national average. Variance management systems have been identified as an imperative tool in clinical pathway implementation, which links continuous quality improvement and clinical audit with clinical practice (Ahmad & Keng, 1998).

Multidisciplinary collaboration

Despite the abundant literature available regarding clinical pathways, their impact on multidisciplinary collaboration has not been scientifically tested and reported in the literature. However, Cardozo (2000), Stratton (2000) and other authors have cited the benefits of clinical pathways on multidisciplinary collaboration. Cardozo stated that clinical pathways are a multidisciplinary approach to patient care and provide better clinical outcomes and better quality at lower cost.

Stratton (2000) stated that clinical pathways describe the contributions of nursing and ancillary departments to patient care. The goal of the multidisciplinary care plan is to improve the collaborative efforts of the health care team in treating patients. Ahmad and Keng (1998) stated that health care delivery systems have changed rapidly over the past ten years, with clinical care moving from task-oriented to more individualized patient care, and from a fragmented approach to care delivery to a more collaborative multidisciplinary approach. Use of clinical pathways is a step toward providing high quality patient care within the constraints of limited health care resources.

Other areas of patient care

The literature discusses that pathway utilization is the essence of continuous quality improvement (CQI). Cheah (1997) stated that clinical pathways allow regular review of the entire care process at periodic intervals and ensures that core processes of patient care are monitored as in the CQI process. In the CQI process, the group continues with the same efforts until optimum results of quality improvement are achieved. The clinical pathway provides a visual overview of a patient's care for each involved health care worker. In this way, all those involved can see specific outcomes and the achievement of set goals. This increases patient and staff education, interest, and participation in patient care (Pritts et al., 1999).

The potential benefits outlined by Brown, Griepp, Buckely, James, and Vandermolen (1998) are many, including decreased unnecessary variation, allowing focus on potential or actual problems or variations; streamlined documentation; and decreased charges and length of stay. In addition, they stated that the assessment criteria of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) are consistent, like the plan of patient care as documented on clinical pathways.

Davis (1995) identified that clinical pathway utilization can result in standardization of resources, and offers considerable advantages to managed care. Kitchiner and Bundred (1999) have supported the ideas presented above by saying that clinical pathways play an important role in clinical risk management. When clinical pathways are developed, current practices are reviewed and recent evidence from literature is incorporated, and, through variance tracking, areas of potential risk in clinical practice are thus assessed and evaluated.

KEY CHARACTERISTICS

The previous section has discussed the evolving role of clinical pathways, their impact on cost, quality, length of stay, and multidisciplinary collaboration. This section will discuss that the literature has identified the importance of integrating clinical pathways, utilizing key characteristics to achieve the described benefits.

It is very important in the design phase of clinical pathways that the multidisciplinary team should be aware of their key characteristics. This will enable a comprehensive and complete document to be designed, which can then be applied effectively to the existing health condition. Nish (2000), Howland (1995), and Cheah (2000) have outlined the following six key characteristics of clinical pathways.

According to Nish (2000), the first key characteristic of integrated clinical pathways should be the *comprehensive design*. This allows integration with other medical records, often replacing other documentation entirely, and promotes collaborative interactions between all providers of services. Furthermore, it provides an update of the patient's progress to all disciplines, thus encouraging and improving collaboration.

The second characteristic is that clinical pathways should have specific timelines, sometimes in hourly increments, for the indicated action. The time specification allows the multidisciplinary team to revisit the patient's goal achievements according to set timelines.

The third characteristic is that a case manager should be assigned to patients on clinical pathways (Howland, 1995). This case manager supervises the practices of all disciplines to ensure consistency.

The fourth characteristic is that variances should be recorded as they are identified. Variances occur when a patient's care or progress does not meet the standards as identified by the clinical pathway.

The fifth characteristic is that clinical pathways should be derived from the current evidence. It is very important that clinical pathways should be continuously reviewed and evaluated in the light of clinical evidence so that they become a method for evaluating the care provided, and form an important component of continuous quality improvement in clinical practice.

The sixth, and final, characteristic is that clinical pathways should define expected or anticipated outcomes of care, and should be used as tools for process and outcome audits (Cheah, 2000).

LIMITATIONS

This literature review has outlined the benefits of clinical pathways as practiced in the clinical settings of western hospitals; however, there have also been some reported limitations. Ahmad and Keng (1998) reported that clinical pathways might require significant amounts of time and resources to set up and implement. In addition, clinical pathway coordinators often face the challenge of engaging physicians in implementation; a lack of interest and compliance by physicians is one of the leading causes for clinical pathway failure. Furthermore**,** it is difficult to develop clinical pathways for diseases with multiple pathologies where clinical management is variable. Finally, the introduction of clinical pathways requires firm leadership commitment, energy, and good communication (Ahmad & Keng, 1998).

DEVELOPMENTAL STAGES

The Health Care Advisory Board (1998) suggested that to achieve good outcomes from clinical pathway utilization, commitment of key people is required. It is important for the multidisciplinary team to recognize and understand the stages of clinical pathway development at the design phase. Knowledge and correct utilization of these stages will

maximize the benefits of the clinical pathway and improve its chances of sustainability in the organization.

Hoxie (1996) and the Health Care Advisory Board (1998) have suggested the following stages of development of clinical pathways:

Stage 1: Organizational approach

The first and most important stage in the development of integrated clinical pathways is that the decision is made on an organizational basis. The multidisciplinary team must know that the successful implementation of the clinical pathway depends on this organizational approach. Senior management commitment is required, and strong leaders from the medical and nursing staff need to be involved in the decision-making. Clinical pathways should form part of the organization's quality improvement program and clinical governance system. A clinical pathway coordinator should be appointed to provide ongoing education and act as a link between all involved professional groups **(**Health Care Advisory Board, 1998; Hoxie, 1996**)**.

Stage 2: Putting systems into place

The second stage is putting a system into place for the design of the clinical pathway. This process requires the establishment of a steering committee made up of a core group of health care workers who will have the responsibility of planning the development, implementation, evaluation, updating and auditing of the clinical pathways (Nish, 2000). Nish (2000) further states that the team responsible for developing and implementing the clinical pathway needs to be carefully selected, and should include representatives from each of the professions who provide care and support for the chosen patient population. The steering committee should include a

project manager, physician, case manager and center for patient care innovation, and the critical pathway advisory committee.

Stage 3: Documentation

According to Hoxie (1996), good clinical pathway documentation should be user friendly and share the following features: have realistic goals of patient care; meet the needs of individual patients; contain complete information for patients; be the single record of patient care; be in a standard format; incorporate current guidelines; comply with local policy; reflect best effective practice; be simple to design and easy to follow; be dynamic and flexible; contain approved abbreviations; be written in clear language; highlight roles, accountability and ownership; include signatures of stakeholders; detail timeframes and measurable outcomes; follow a logical sequence ensuring no duplication of information; and record variations along with related actions. These points could be used as a checklist by the steering committee to ensure the newly designed clinical pathway has all the required key characteristics (Health Care Advisory Board, 1998).

Stage 4: Pilot and implementation

The fourth stage is the implementation phase, which should begin with a pilot program. Steering committee members should agree on the beginning and end dates of this pilot program. All patients from the sample group should be included in the pilot phase. Patient compliance with the clinical pathway should be measured, and ongoing feedback should be provided to all participating staff by communicating successes and celebrating accomplishments and achievement of milestones in order to maintain the momentum. The implementation process must also include regular monitoring and analysis of variances and, if appropriate, changes in practice should be incorporated into

the clinical pathway. A clinical pathway revision schedule should be agreed on by the steering committee to ensure that clinical care and evidence are reviewed regularly.

Stage 5: Evaluation

During this stage, the impact of the clinical pathway on patients, staff, clinical and social care teams, and the organization should be evaluated, including an analysis of variations. It is important to identify, measure, and quantify any improvements in these areas so that the multidisciplinary team can decide whether to continue using the clinical pathway in the current disease process, and possibly replicate it for application in other clinical areas.

In summary, the literature has outlined the various stages of clinical pathways. Important features include leadership commitment, formation of a dedicated steering committee, appointment of a pathway coordinator, development of user-friendly documentation, piloting a project before actual implementation, and evaluation of the impact of clinical pathways on a regular basis through a continuous audit process.

Section Three: Literature on Clinical Pathway Evaluation Process

As discussed in the previous section, clinical pathways require continuous evaluation of all aspects of delivery of care to discover the gaps and variances in the core processes. This evaluation allows further refinement of the clinical pathway and further improvement of core processes. This section of the literature review will discuss the evaluation process.

The ongoing evaluation process for clinical pathways establishes whether or not identified gaps and variances have been resolved completely, and whether or not maximum benefits in patient care have been achieved. Howland (1995) and other

researchers have suggested that clinical pathway goals can be evaluated by following particular guidelines.

Table 1 illustrates the process for the design, implementation, and evaluation of clinical pathways. This table outlines the investigative process used in the current study, but it could also be used as a guideline for pathway process in future research studies. Furthermore, this outline can serve as a checklist or algorithm to ensure that clinical pathways are designed, completed, implemented and evaluated in line with current literature process, and formulates a framework that can be used by the multidisciplinary group in the design of clinical pathways in other aspects of patient care.

Table 1
Process for designing, implementation and evaluation of clinical pathways

[image removed]					

Source: Health Services Utilization and Research Commission (2001).

SUMMARY

In conclusion, the reviewed literature relating to clinical pathways has outlined that clinical pathways are becoming an increasingly common tool to improve core processes of patient care. The literature has highlighted that the most relevant reasons for the popularity of clinical pathways are that they contain costs and decrease length of stay by reducing variations and inefficiencies in practice; they provide organization of care in a standardized, concise and streamlined manner; they reduce and control risk by delineating the standards of care and best practices; and they track and analyze patient outcomes in order to improve patient satisfaction, standards of care and resource utilization.

Section Four: Literature on Clinical Pathway Outcomes/Variances

As discussed earlier, objective one of this investigation focuses on the measurement of outcomes and variances of clinical pathways on clinical quality for patients attending AKUH for TURP surgical intervention. This review focuses on literature relating to the identification and exploration of the roles and relationships of outcomes and variances as they apply to clinical pathways. Variance analysis and variance management in the clinical pathway context is also discussed.

The importance of variances and outcome monitoring in the pathway context is that they explore gaps in processes, as well as in practices, of quality in patient care management, and allow health team members to formulate strategies in order to prevent reoccurrences of the same variances. Danforth and Smith (2001) stated that a patient's actual progress may deviate from the course projected in the clinical pathway. This is called a variance. An example of a variance would be a patient who is still receiving intravenous antibiotics on the fifth hospital day, when the pathway criteria call for oral antibiotics by the third day.

Variance is the difference between what has been planned and what has actually happened. The term variance in the clinical pathway context is defined as any deviation from the clinical pathway plan (Ahmad & Keng, 1998; Herring, 1999; Luc, 2000). A variance can be categorized as relating to patient or family, caregiver or clinician, hospital or system, or community. A patient or family variance occurs when the patient has a complication or is otherwise unable to meet the target outcomes planned in the clinical pathway. Hospital or system variances relate to operational insufficiencies, such as an inability to schedule a test in a timely manner. Community variances occur when discharge is delayed because the community support needed by the patient is not available at the time of discharge. The most commonly occurring variances are physician and nursing related, which arise when the caregiver cannot deliver the patient care according to the set regimen, resulting in delays in the delivery of care. These are referred to as caregiver-related variances.

Variance management is a three-step process. Step one involves the tracking and recording by caregivers (nurses and physicians) of the variances as they occur. According to Stratton (2000), the requirement of clinical pathway evaluation is that variances should be documented on the multidisciplinary care plan by the caregiver as they occur, by listing the variance code, the caregiver's initials, a description of the variance problem, the potential reason for the variance such as system error, caregiver delay, or patient noncompliance, and the actions planned. When the variance problem is resolved and the patient is back within the set parameters for the clinical pathway, the date is entered accompanied by the caregiver's initials. Kitchiner and Bundred (1999) recommend the same process, stating that variances from clinical pathways should be recorded and analyzed continuously to evaluate the effectiveness of clinical practices. These variances should then be recorded on a separate variance sheet, database, in

progress notes or nursing care plans, and directly online through computer. The aim of this documentation and analysis of variance is to ensure that systematic clinical audit routinely confirms everyday practice.

The second step of the variance management process is variance analysis. According to Cheah (2000) the recording, collection and analysis of variances provide continuous audit data on the care being delivered. Such audit information is specific to each case-type on the clinical pathway being analyzed. Variance data provides the essential tool that places clinical pathways squarely within the tradition of continuous quality improvement. Analysis can highlight deficiencies in the care processes due to problems arising from the hospital system, such as reasons for delayed discharge. Kitchiner et al. (1996) stated that variance analysis in pathway terminology provides high quality, relevant, prospective information on current clinical practice. Analysis of variation from the clinical pathway also highlights common areas of inconsistency in the care. This, in essence, is evidence-based medicine and allows surgeons to plan the best possible treatment for the patient. Ahmad and Keng (1998) supported the idea of Kitchiner et al. (1996), stating that clinical pathway used in conjunction with variance analysis resembles clinical audit. The audit process includes drafting of the clinical pathway and defining the objectives for the audit cycle. The next stage in the audit process is exploring differences in standards set by the institution with the observed rating of practice. Likewise, analysis of variances in clinical pathway does the same, so that necessary amendments to the clinical pathway can be made to reflect the best current practice. This is analogous with the workflow of the audit cycle. In this approach, all disciplines are involved in the care of patients, to document the variances.

The final stage of variance management involves reviewing and improving the trends that have occurred as a result of variance analysis. This process is continued until

the set targets or best practices are embedded in the hospital system in order to have the best outcomes for patient care.

Ahmad and Keng (1998) stated that a variance might be positive or negative. Positive variance is a planned activity achieved earlier than expected; for example, a patient is discharged a day earlier than expected. On the other hand, negative variance is a planned activity that did not occur, or occurred later than expected. An example of negative variance is surgery being delayed due to a chest x-ray not being taken. The variance management system is imperative in clinical pathway implementation, linking continuous quality improvement and clinical audit with clinical practice.

Benson et al. (2001) stated that the information gained through variance-tracking can benefit everyone in a health care system, including administrators, practitioners, and patients, by revealing ways to improve outcomes and reduce costs. Staff involved in case management and outcomes management can use the variance-tracking report to accomplish the patient's care goals.

SUMMARY

The literature review in this section discussed monitoring of variances and outcomes in the pathway context, allowing heath team members to continuously evaluate a patient's care and progress. This section also discussed that variance management is a three step process, involving tracking and recording of variances by caregiver as they occur, variance analysis, and improving the trends in clinical practice based on the results of the variance analysis. Thus the variance management process is a continuous evaluation tool and audit process.

Section Five: Literature on Clinical Indicators

The second objective of the current study was to examine eight clinical indicators to evaluate the effect of implementation of clinical pathways on the quality of clinical care

for patients attending AKUH for TURP surgical procedure. This section of the literature review identifies the role of monitoring of clinical indicators in the pathway context.

Evaluation of clinical quality is essential for any hospital desiring to become a leader in the delivery of high quality care. It allows administrators and clinicians to identify areas for improvement and to measure progress towards clinical quality goals (Mishra, 2003). Commitment to delivering high quality care should be at the heart of everyday clinical practice (Scally & Donaldson, 2002). Measurement of a clinical quality has always engendered a multiplicity of approaches, and most of the hospitals in the United States have launched clinical governance to evaluate such quality practices. The World Health Organization is helpful in exploring the idea of clinical governance, dividing quality into four aspects: professional performance (technical quality); resource use (efficiency); risk management (the risk of injury or illness associated with the service provided); and the patient's satisfaction with the service provided. These dimensions of quality are taken a stage further in the components identified in the new National Health Survey White Paper as being the attributes of an organization providing high quality clinical care (Scally & Donaldson, 2002). In the future, well-managed organizations will be those in which financial control, service performance, and clinical quality are fully integrated at every level (Scally & Donaldson, 2002).

OVERVIEW

A clinical indicator is an objective measure of outcome or process of care in quantitative terms. Indicators are not exact standards; rather, they are designed to be flags which, through the collection and analysis of data, can signal possible problems and opportunities for improvement (New South Wales Health Department, 2001).

Clinical indicators allow exploration of gaps in clinical quality while the patient is on a clinical pathway. Clinical indicators are indicators or measures that relate to

specific clinical conditions, or to measures of function that have particular significance for particular conditions. A clinical indicator is also defined by the Australian Council on Healthcare Standards (ACHS) as a measure of the clinical management and outcome of care. It is an objective measure of the process or outcome of patient care in quantitative terms (Boyce, McNeil, Graves, & Dent, 1997).

BENEFITS OF CLINICAL INDICATORS

The New South Wales Health Department (2001) stated that the benefits to be gained from the use of clinical indicators do not lie in the collection of the data, but in how those data are used; that is, in the data analysis, and the actions taken to achieve sustained improvements in clinical practice. Clinical indicators do not work unless they are used effectively by clinicians and managers to bring about improvements.

The data collected and reported as a result of clinical indicator monitoring will give clinical teams information about the care that is delivered. Teams should discuss the data collected on each chosen indicator and identify areas of practice variation that require further investigation. Teams should incorporate these discussions into other team/clinical unit meetings. Such data should be used to flag areas for possible investigation. The absolute numbers collected may not give teams a great deal of information initially; however, graphed trends in the data will give more valuable information and will alert them to the need for investigation. These investigations should be undertaken using the scientific clinical practice improvement methods.

SELECTION OF APPROPRIATE CLINICAL INDICATORS

Selection of appropriate clinical indicators for any disease process is an important decision, and clinicians and health team members should decide critically which indicators are to be monitored for a particular disease in order to have the best outcomes. Indicators should be chosen for their value in providing the information

required by clinicians to measure and improve the quality of care, not simply for the purposes of reporting. The New South Wales Health Department (2001) stated that the identification of appropriate indicators should be an interactive process, and should involve an assessment of such issues as the usefulness of the data, availability of existing collection mechanisms, and resources required for collection.

The New South Wales Health Department (2001) recommended that the monitoring process should initially identify the following information: the reason for data collection; the definition of the numerator, denominator and benchmarks (if available); the reporting period; the numbers; the action required to improve the quality of care as a result of the data collection; and comments on the data (e.g., an explanation of any unusual results).

The Health Care Advisory Board (1998) stated that the following indicators are used to evaluate effectiveness of clinical pathways: overall hospital charges, complications, LOS, mortality, net income, net revenue, patient's quality of life, patient satisfaction, admission rates, readmission rates, and resource utilization. The Board further stated that to improve the quality of care, hospitals should measure such quality indicators as adverse drug reactions, complications of surgery, days at risk for non-payment by insurers, death of an elective patient, and pre/post-operative re-intubation, and readmission. Hospitals also measure indicators of patients' outcomes such as physiological functioning, ability to complete activities of daily living, pain management, socialization and role functioning, mental health status, knowledge of ongoing health care needs, and patient/family knowledge of the disease process. Zevola (1997) stated that the efficiency of clinical pathways is determined through the monitoring of clinical indicators. These include length of stay, readmission rates, morbidity, mortality, and patient satisfaction.

SUMMARY

The above section has outlined the role of clinical indicators in clinical improvement, and their benefits. This was followed by a discussion on the selection of appropriate indicators. It is evident from the literature that proper selection of indicators is crucial for specific disease intervention in order to ensure maximum clinical improvement for clinical quality in specific patient care services.

Section Six: Literature on Financial Variances

The third objective of the current investigation was to measure financial variances of patients who underwent TURP surgical procedure, and to assess the overall cost of their hospitalization. This section discusses the literature relating to financial management in different health care settings.

FINANCIAL ENVIRONMENT OF HEALTH CARE ORGANIZATIONS

One of the most important financial differences between hospitals and other businesses is the way in which their respective customers or clients make payment for services received. Most businesses have only one basic type of payment-billed charges; the customer is presented with a bill that represents the product of the quantity of goods or services received at their appropriate prices. However, the situation in hospitals is much more complicated.

The complexity of the financial system operating within a health care organization will depend on the size of the hospital, its patient volume, its physical location, and the impact of any competitors. University teaching hospitals, for example, generally have considerably complex financial systems. The various payment systems used in hospitals, and their financial implications, must therefore be looked at in any useful discussion on financial variances.

Cleverly (1997) stated that most hospitals use the following four major payment systems: historical cost reimbursement, specific services (charge payment), negotiated bids and capitated rates, and diagnosis-related groups.

The two key elements in the historical cost reimbursement system are reasonable cost and apportionment (Neuman, 1997). Reasonable cost implies a qualification introduced by the payer to limit total payment by excluding certain categories of cost or placing limits on costs that the payer deems reasonable. Apportionment refers to the manner in which costs are assigned or allocated to a specific payer such as Medicaid. For example, assume that a hospital has total reasonable costs of US$10 million, which represents the costs of servicing all patients. If Medicaid is a historical cost reimbursement payer, an allocation or apportionment of that US$10 million is necessary to determine Medicaid's share of the total cost. Often, the apportionment is related to the hospital's billed charges. For example, if charges of services to Medicaid patients were US$3 million and total charges to all patients were US$15 million then 20% of the US$10 million cost would be apportioned to Medicaid.

The second type of hospital payment system is the specific services payment system. In this payment system, some hospital patients make payment based on charges for the specific services provided, such as nursing, surgery, pharmacy, or laboratory services. External parties, such as state rate-setting commissions, may regulate these charges, or they may be completely unregulated and left to the discretion of hospital management. Payment for specific services has several important implications for financial management. First, revenue from specific services may represent the major source of profit to the hospital. In this case, pricing or rate-setting becomes an important hospital policy. Second, the hospital's rate structure should be based on projected

volume and cost factors. Any unexpected deviation from the hospital's plan merits prompt attention (Cleverly, 1997).

The third type of common hospital payment system is negotiated bids and capitated rates, and represents a new type of payment for many hospitals. This type of payment results from a specific contractual arrangement between the hospital and a payer. A special contract with a health maintenance organization or a local employer is a common example of a negotiated bid or capitated arrangement. Hospitals submitting low bids (e.g., a low rate per patient day) would often receive contracts to provide hospital services to Medicaid patients in a given area. In a negotiated or capitated payment environment, financial planning and controls are critical, even more critical than in a specific services payment situation. The fee arrangement is usually contractually fixed for a period of one year. Cost accounting and analysis are also important (Newman, 1997).

The fourth, and final, type of hospital payment system is the diagnosis related group (DRG) system. In this payment system, the hospital payments are made on the basis of diagnosis-related group. This has become prevalent in US hospitals since 1983 when Medicare initiated payment on this basis. In the Medicare DRG payment system, specific prices are established for 495 specific diagnostic categories. These prices are updated each year by Medicare to reflect inflationary changes as well as changes in treatment protocols. Hospitals must produce a given DRG at a reasonable cost. Porter and Miller (1992) outlined four primary ways in which costs for a DRG can be reduced: reduce the expenditure on resources, reduce the length of stay, reduce the intensity of service provided, and improve production efficiency. Two of these four methods for DRG cost reduction involve medical staff decision-making; namely, reducing length of stay, and reducing service intensity. Thus, it is necessary that hospital management

focuses more intensely on product lines. Ultimately, hospitals need to analyze the relative profitability of given DRGs that comprise particular clinical services, such as those involving psychiatry or surgery. Clearly, cost accounting by DRGs is essential to any intelligent analysis of relative DRG profitability. Hospitals' cost accounting systems are usually structured around departments, such as dietary, laboratory, and physical therapy departments; however, DRGs require services from a number of departments, and therefore costs must be assigned from these departments to individual DRGs (Finkler, 1996).

According to the Health Care Advisory Board (2003) all of the profiled institutions use the step-down cost allocation method to spread the indirect expenses of daily hospital functioning across all departments. Indirect expenses comprise the general expenses that finance personnel cannot directly track to activities completed by those hospital departments that typically do not produce revenue. For instance, activities completed by the human resources department serve personnel throughout the hospital but do not generate revenue. By using the step-down method, hospital administrators may allocate the costs of non-revenue-generating departments, such as the Human Resources department, to revenue-generating departments, such as the Operating Room department. Revenue-generating departments then incorporate step-down, indirect costs into the costs of delivering a product to patients. These costs translate into patient charges, so that costs associated with non-revenue department functions are covered by revenue-department patient charges. The financial systems discussed above are not in use at AKUH.

SUMMARY

This section concludes that different healthcare institutions use different financial systems appropriate for their health care settings based on the size of the hospital, volume, physical location, and impact by other competitors.

Section Seven: Literature Related to Patient Satisfaction

When introducing innovative ideas such as clinical pathways into health care settings, patients should be canvassed to assess their satisfaction with the core processes of that setting. Measuring patient satisfaction is the fourth objective of the current investigation, and this section highlights the role customer/patient satisfaction plays in an organization's success or failure.

Patient satisfaction is a determining factor in the success or failure of many organizations today, and is recognized increasingly as an important dimension of quality of care. Arguably, patient satisfaction has always been the goal of professional health care because health professionals are guided by, and required to maintain, standards of care, thought to be necessary for optimal, high quality, safe patient care (Donabedian, 1988). Organizations have discovered that quality applies as much to the way people are treated as it does to their products. Today's world-class organizations have learned that the way to keep current customers satisfied and attract new ones is to consistently exceed expectations in every area of service.

Patient satisfaction is frequently defined as the extent to which patients' expectations of care matched with the actual care received (Abramowitz, Cote, & Berry, 1987; Hill, 1997; Linder-Pelz, 1982; Ludwig-Beymer, Ryan, Johnson, Hennessey, Gattuso, & Epsom, 1993; Petersen, 1988; Risser, 1975; Swan, 1985). In a thorough concept analysis of patient satisfaction, Eriksen (1995) defined patient satisfaction with nursing care as the patients' subjective evaluation of the cognitive-emotional response

that results from the interaction of the patients' expectations of nursing care and their perception of actual nurse behaviors/characteristics.

One of the prime goals of patient-centered care is to have patients with higher level of hospital satisfaction. Baron-Epel (2001) stated that if patients are viewed as 'consumers' a consumer model such as the expectancy disconfirmation model could be applied from marketing theories to health services provision. In this model, the assumption is that patients have expectations, that the degree to which these expectations are fulfilled can be measured, and that there is a clear relationship between these expectations and satisfaction levels. The higher the perceived fulfillment of the expectation, the higher will be the level of satisfaction. The consumer model is based on the premise that consumers of health services are able to choose where and from whom they wish to receive treatment. When an individual is satisfied with a product, he is more likely to continue to use it.

Powers and Bendall-Lyon (2003) stated that patient satisfaction and dissatisfaction becomes a driving force for health care administrators because it drives whether patients will return to that health care provider or not. Salomon, Gasquet, Mesbah, and Ravaud (2001) stated that from the hospital's perspective, the patient's view of the care provided to them is important to both clinical and management staff, and that patient satisfaction is predictive of future behavior such as compliance with treatment and intent to return for care. Scott and Smith (1994) have supported this idea by stating that patient satisfaction and customer focus are increasingly important objectives for health services.

Gotlieb (2002) stated that a patient's belief that they have a measure of control over the care they receive helps them achieve two important goals. First, most people want some degree of control over their life, which can be perceived as diminished while

they are a hospital patient. Second, most hospital patients want to be treated as individuals. That is, patients want to be recognized as persons with individual qualities, needs, and goals and for their needs to be met and cared for as required by them. This result may enhance the patient's self-esteem and put the patient in a more positive mood. In addition, whenever patients believe that there is an internal locus of causality for their care, nurses are more likely to be viewed positively because they are helping patients reach some of their important goals.

Evaluation of patient satisfaction is a key to continuous quality improvement in the healthcare setting. Fallis and Chemitt (1997) describe a Patient Comment Line, an innovative and cost-effective method for evaluating patient satisfaction. If people are allowed to respond freely to an inquiry, a better measure of their salient concerns is obtained, compared with the close-ended format.

Scott and Smith (1995) stated that one way in which consumer opinion is measured is the patient satisfaction survey. Satisfaction is measured by means of a questionnaire, the most common format being one where questions are grouped into main categories and the patient's response score is recorded on a scale; for example, from "very satisfied" to "very dissatisfied." In hospital settings, the main categories usually include interpersonal relationships, information, access and convenience, hospital environment, and hotel services.

In competitive environments, those institutions that demonstrate a response to consumer needs are in a better position to attract funding. The patient satisfaction survey is becoming the main method of assessing such requirements. These surveys are very popular in health care (Avis, Bond & Arther 1995; Outinen, Haverinen, Maaniitty & Ym, 1995; Williams, 1994) for several reasons; for example, Williams (1994) refers to the efforts of quality management and improvement, increased attention to

customers, and to the increasing need to evaluate public services. Patient satisfaction has been seen as a measure of quality (Avis, Bond & Arther, 1995).

CONSTITUENTS OF PATIENT SATISFACTION SURVEYS

The literature elaborates what should be measured with patient satisfaction surveys. Scheider and Bowen (1999) suggest that when measuring patient satisfaction, the areas that should be assessed are satisfaction with care givers' competency; level of teaching; amount of information provided; involvement in decision-making; staff behavior; and satisfaction with care, physicians, environment, and meals (Health Care Advisory Board, 1998).

The items measured to reflect patient satisfaction may include nursing care, medical care, ancillary support, promptness of service, education provided, and preparation for discharge (Zevola, 1997). Avis, Bond, and Arther (1995) identified other measures of patient satisfaction such as lengthy delays between referral from the general physician to the first consultation, long waiting times in the clinic, lack of choice over appointment time, inadequate information, disagreeable waiting facilities, and poor amenities. They felt that these were high dissatisfiers, and if they were measured and improved would result in high satisfaction.

IMPACT OF CLINICAL PATHWAYS ON PATIENT SATISFACTION

An extensive search by the researcher at the time of proposal formulation for the current investigation failed to reveal any research-related literature that measured the impact of clinical pathways on patient satisfaction. However, in March 2003, the Health Care Advisory Board (HCAB) was requested to carry out a search related to this topic. The literature search provided by the HCAB (2003) indicated that some work has been done to measure the impact of clinical pathways on patient satisfaction in very recent years, and that clinical pathways have been shown, in several studies, to have a positive effect

on patient satisfaction. Moreover, Chinnis, (2001) stated that the use of clinical pathways seemed to positively correlate with high patient satisfaction. The HCAB research indicated that this might be due to the fact that patients feel more comfortable when they know what to expect regarding their general course of care and their expected time of discharge.

Another study relating to measuring patient satisfaction with clinical pathway treatment was carried out by Luc (2000). He conducted a study of a breast disease pathway and discovered that while overall satisfaction changed little following the implementation of the pathway, several precise elements of satisfaction were positively impacted by the care pathway. For example, the greater provision of information to patients—a pathway objective—positively affected their satisfaction with support/help available and information provided.

Browne, Giles, McCaskill, Fasher, and Lam (2001) found that the use of pediatric clinical pathways in the emergency department resulted in high parental satisfaction, possibly due to rapid child stabilization, reduced admissions, and shortened length of stay. A study of a clinical pathway used in outpatient laparoscopic cholecystectomy found that patients were highly satisfied with care provided (Worwag & Chodak, 1998).

Price et al. (1999) studied a clinical pathway developed by pediatric intensive care nurses that was used during a 23-month study on 46 post-operative patients. Patients and families were generally satisfied with their hospital experience, including analgesia and length of hospitalization.

Evans, Martin, and Winslow (1998) found from 1455 patients (a 75% response rate) that nursing was the primary determinant of overall patient satisfaction. Nursing care had a beta coefficient of 0.61%, while all other services had coefficients of 0.09%

or less. Therefore, staff nurses must be aware of their important contribution to patient satisfaction. However, in other studies, the impact of clinical pathways on patient satisfaction is less clear; frequently, authors have noted that the implementation of clinical pathways did not positively or negatively affect satisfaction levels despite rapid discharge and less personalization of care processes. As indicated by these examples, the ability of a specific clinical pathway to positively impact on patient satisfaction depends largely on the effectiveness of that individual pathway. Emphasizing this fact, a recent review of stroke pathways found that in some randomized trials, patient satisfaction and quality of life were lower in patient groups treated using care pathways (Kwan & Sandercock, 2002).

SUMMARY

The discussion in this section has focused on literature relating to patient satisfaction levels and their measurement. The implementation of clinical pathways has been shown to have a major impact on patient satisfaction levels. The literature reviewed also highlighted that patient satisfaction is a important key for the survival of health care institutions, and that the measurement of patient satisfaction, particularly by survey, should be conducted using validated instruments that identify key areas of organizational improvement from the patients' perspective.

Section Eight: Literature on Staff Satisfaction

This final section of the chapter will discuss the literature relating to the impact of clinical pathways on the satisfaction levels of staff and caregivers. Objective five in the current study is to measure these levels as they relate to clinical pathway intervention.

Staff are the vital resource of any institution, and of health care organizations in particular. Costello (2001) stated that whether a patient has a good or bad experience at any hospital depends largely on the actions of employees working in that institution,

therefore, hospital staff satisfaction translates into patient satisfaction. The key to success for many organizations is to encourage staff feedback and act on this feedback by changing services according to reported requirements. This approach increases the likelihood of staff being satisfied with, and continuing to provide care with, the particular health service.

The meta-analysis of 48 studies by Blegen (1993) found that job satisfaction is positively related to organizational commitment, communication with supervisors and peers, autonomy, recognition and fairness, and is negatively related to stress, routinization and personal locus of control. More recent studies have yielded similar findings, and have also highlighted the impact that the organizational environment, the patient care experience, and managerial leadership skills have on nurses' job satisfaction levels (Chinnis et al., 2001).

According to the Health Care Advisory Board (2003) very little research exists regarding the correlation between clinical pathway implementation and employee satisfaction; however, there is literature to suggest that clinicians and other frontline care staff members are often pleased with the use of clinical pathways, viewing them as useful tools for supporting the provision of high quality patient care.

Staff involved with patient care involving clinical pathways have reported that their utilization in clinical practice has a major role in improving continuity and multidisciplinary collaboration, improving clinical quality, making patient care more focused, prompting actions related to delivery of care, and monitoring of clinical standards (Health Care Advisory Board, 2003). In his study on evaluation of effectiveness of pathways, Luc (2000) also measured staff satisfaction with clinical pathways. He stated that the staff interviewed highlighted many positive features of

clinical pathways, and the most frequently cited was that staff focused on clinical care, and, therefore, that clinical improvement took place.

Recent study of nurses at a university hospital in the mid-Atlantic region of the US found a relationship between staff satisfaction and structure of care delivery (Keuter, Byrne, Voell, & Jackson, 2000). Patients and staff are both considered as consumers. Bryant (1998) stated that the dominant theory of consumer satisfaction is the disconfirmation of the expectancy paradigm. This means that the consumers' level of satisfaction is determined by comparing expectations with performance. If performance surpasses expectation, the consumer experiences positive disconfirmation and is satisfied; conversely, if performance falls below expectations, negative disconfirmation and dissatisfaction occur.

Conclusion

This chapter has presented and discussed a comprehensive review of research literature relating to the intervention and objectives of the current investigation. According to the literature, clinical pathways are becoming popular in health care organizations as a means of improving clinical quality, reducing length of stay and reducing cost of care. Clinical quality, in the context of pathways, is monitored through ongoing evaluation and analysis of variances as they occur during the course of treatment. Furthermore, monitoring of clinical indicators allows measurement of clinical quality and identifies the gaps in delivery of patient care. The exercise of monitoring produces benefits for patients, health team members, and organizations by improving existing systems and modifying their core processes. The chapter has further discussed that patient satisfaction and staff satisfaction surveys are becoming popular and powerful tools in gathering the feedback that can be used by health care institutions to improve their core processes.

The literature review also identified that the reported benefits of clinical pathways have only been tested in western health care settings; no such studies were found to have been conducted in Pakistan or other Asian health care settings. This current study, therefore, is an important contribution to the body of literature on clinical pathways and the improvement of patient-related outcomes, not only for health care settings in Pakistan, but in other Asian countries as well.

The discussion in the following chapter presents useful information regarding conceptual framework, and discusses the most useful and appropriate choice of conceptual framework to inform and guide the present investigation.

CHAPTER THREE

CONCEPTUAL FRAMEWORK

The critical role of research in nursing practice is the application of nursing theories to discover new knowledge. The current study utilizes King's interacting systems framework and theory of goal attainment to investigate the effectiveness of implementing clinical pathways for TURP patients. This theory was selected because it formulates a structure which provides an integrated framework for the research variables used in the current investigation. Furthermore, the utilization of King's theory will expand awareness and enhance empirical understanding of clinical pathways and their impact on improving clinical quality, patient and staff satisfaction, and cost-effectiveness. This chapter introduces King's theory and then describes the relevance and benefits of its application to the current study.

Introduction to King's Theoretical Systems

King first published her conceptual framework in 1971, and further developed it into the theory of goal attainment in 1981. Her theory is based upon and draws attention to the key elements of General Systems Theory, with an emphasis on open systems. This is evident in her assumptions, concepts, and propositions (Johson & Webber, 2001).

King's systems framework is based on the assumption that human beings are the focus of nursing. The goal of nursing is health: its promotion, maintenance, and/or restoration; the care of the sick or injured; and the care of the dying (King, 1992). Husting (1997) stated, "King's theory evolved from the General Systems Theory of Von Bertalanffly. The components of a system theory are (a) goal; (b) structure; (c)

functions; (d) resources; (e) decision making" (p. 15). King (1996) further stated that the "nursing domain involves human beings, families, and communities as a framework within which nurses make transactions in multiple environments with health as a goal" (Norris & Frey, 2001).

Historical Development of King's Theoretical Systems

King (1964) spoke of the need to focus on and organize existing knowledge in nursing, as well as expand the knowledge base for nursing practice. She identified the concepts of social systems, health, interpersonal relationships, and perceptions as universal to the discipline of nursing, thus representing a frame of reference for the nursing domain (King, 1995a, 1968).

In 1971, King published a conceptual framework for nursing organized around personal, interpersonal and social systems. The concepts were expanded to include communication, interpersonal relationships, information, energy, social organizations, role and status. A more formalized framework by King was published in 1981.

In 1978, King stated that nursing needed to be promoted as a science, and that the relationship between nursing and research should be seen as a way to build scientific knowledge. The goal of the conceptual system, and the goal of nursing, is health. According to King (1992), the conceptual system served to identify essential concepts for nursing as a discipline, and provided the structure to derive and test middle-range theories, develop nursing curriculum, and implement theory based practice.

King (1981) also introduced the theory of goal attainment, a middle-range theory derived from the conceptual system. Central concepts in the theory of goal attainment are perception, communication, interaction, transaction, self, role, growth and development, stressors/stress, time, and space. The concepts of interaction, transaction, and perception form the core of a transactions process model. Transactions

are critical antecedents to goal attainment. King is one of the few theorists to generate both a conceptual system and a middle-range theory for nursing.

Although there have been few changes to the conceptual system or theory of goal attainment since 1981, King and others have provided ongoing discussion and clarification of these theoretical and philosophical positions through debates in nursing journals and presentations (Fawcett, 2000; King, 1988, 1989, 1990, 1991, 1992, 1995a, 1995b, 1997a, 1997b, 1998, 1999, 2001; Norris & Frey, 2001). Changes to the conceptual system include the addition of the concept of the personal system, spirituality as a basic aspect of human beings, and the request to use the term conceptual system rather than conceptual framework or paradigm (King, 1997a). Recently, King further discussed her perspective of the philosophy of human beings, and the theory of goal attainment (King, 1997).

King's (1981) dynamic conceptual framework of interacting systems is applicable to holistic care, ensuring interaction between individuals, groups and social systems in order for the nurse to be an effective advocate (Goodwin, Kiehl, & Peterson, 2002).

Discussion of King's Theoretical System

King's theoretical system comprises three components: the conceptual system (constructed of interacting systems), the theory of goal attainment, and the transaction process model.

CONCEPTUAL SYSTEM

The first component of King's theoretical system is the conceptual system. The conceptual system provides a comprehensive view of three dynamic interacting systems: personal, interpersonal and social. King stated that the twelve concepts of self, body image, role, perception, communication, interaction, transaction, growth and

development, power, authority, organization and decision-making make up the conceptual system. The concepts that provide substantive knowledge about human beings are placed within the personal system, those relating to groups are placed within the inter-personal system, and those relating to large groups that make up a society are placed within the social system (Parker, 2001). Young, Taylor, and Mc Laughlin-Renpenning (2001) stated that King's conceptual system model depicts individual systems interacting with the interpersonal and social systems. Furthermore, the interpersonal system interacts with the personal and social systems; thus; all three systems interact very closely with each other to make one whole integrated system.

According to King (1999), individuals are personal systems, as each individual is an open, total, unique system in constant interaction with the environment. When two or more individuals interact, they form interpersonal systems; for example, the interaction of a nurse and a patient forms an interpersonal system (King, 2000). Interactions among health team members also form interpersonal systems. The groups in interpersonal systems may range from two or three interacting individuals, to small or large groups. When the number of individuals in the group increases, the complexity of interactions also increases. King further stated that the concepts critical to understanding interactions among these groups are communication, interaction, role, and transaction. King (1999) saw communication as a change of information, from one state to another, and interaction as a mutual act of two or more members. She described role as a set of behaviors expected when occupying a position in a social system, and transaction as observable behaviors of human beings interacting with their environment (King, 1981). These concepts of communication, interaction, role, and transaction are of prime value in healthcare systems and have a great impact on a patient's health and recovery.

When personal and interpersonal systems expand they form social systems, which are composed of large groups with common interests and goals. A social system is defined as "an organized boundary system of social roles, behaviors, and practices developed to maintain values and the mechanisms to regulate the practice and rules" (King, 1981, p. 115). Examples of social systems include healthcare settings, workplaces, educational institutions, religious organizations, and families (King, 1997). Interactions with social systems influence individuals throughout their life. King views the hospital as a social system that has the potential to have either a positive or negative impact upon patients. King stated that the concepts that are useful to understand social systems include organization, authority, power, status and decision-making.

The organization is a system that conducts activities to achieve common goals. Authority is a transactional process characterized by active, reciprocal relations where the members' values, backgrounds, and perceptions play a role in defining, validating, and accepting the individuals within an organization. Power is the capacity or ability of a group to achieve goals, and status is the position of an individual in a group or in an organization. Finally, decision-making is a dynamic and systematic process by which a goal-directed choice of perceived alternatives is made, and is acted upon by individuals or groups to answer a question or to achieve the set goals (King, 1996).

THEORY OF GOAL ATTAINMENT

The second component of King's theoretical system is the theory of goal attainment. This theory addresses nursing as a process of human interactions. Norris and Frey (2001) described the theory of goal attainment as deriving from the personal and interpersonal systems. The theory specifically addresses nursing interaction with patients in order to achieve health goals. The initial concepts of the theory—perception, communication, interaction, transaction, self, role and decision-making—represent the

essence of nursing (King, 2000). Husting (1997) stated that King's theory of goal attainment includes the perception and judgments of both the nurse and the client. These lead to action, which, in turn, creates reaction and interaction, and results in transaction between the nurse and client. King acknowledges the dynamic interaction among society, groups and individuals, and includes cultural facets within each of these three interacting systems. Important concepts have been provided to the nursing profession by King that are relevant to issues of cultural diversity and trans-cultural nursing care. Johson and Webber (2001) have supported Husting (1997) by stating that King's theory of goal attainment provides direction for nursing practice because it emphasizes the processes of communication, interaction, and transaction, which are the foundations for promoting and maintaining the health status of individuals and families.

TRANSACTION SYSTEM

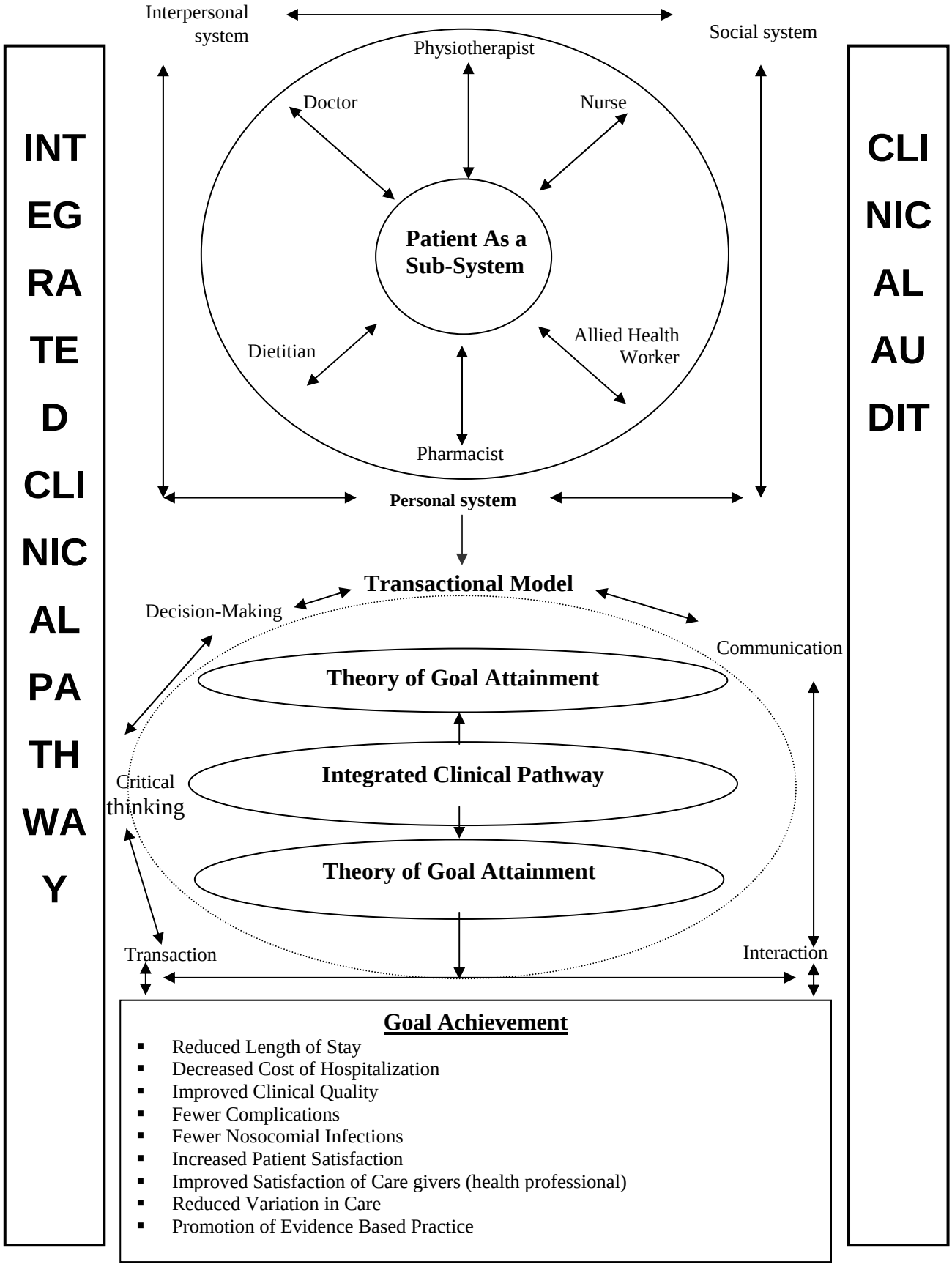
The third component of King's theoretical system is the transaction system. Barnum (1998) defined transaction as an agreement between the patient and nurse on a goal; in King's interaction theory, the nurse and patient act, react, interact, and finally transact on a goal or goals. This transaction could be between patient and nurse on any subject matter. Transactions are an exchange of valued things between two or more individuals. This exchange implies bargaining power, negotiation, and social exchange. Transactions are effective when two individuals interact with each other at closer proximity. Transactions address collaboration between doctors/allied health workers and/or patients. The multidisciplinary team's perceptions serve as a basis for gathering and interpreting information.

Development of Conceptual Framework from King's Model

The framework outlined in Figure 2 is the conceptual framework utilized in the current study. The researcher has developed this framework from the concepts of King's

interacting system framework and theory of goal attainment. If personal, interpersonal, and social systems interact together, then goal achievements become more realistic. Similarly, the development of an integrated clinical pathway enhances interaction among health team members in order to achieve optimal health outcomes for patients. A clinical pathway is essentially a multidisciplinary plan of care that outlines the main clinical interventions carried out in the hospital by a group of professionals responsible for the care of the patient. It is used as a guide to plan, co-ordinate, deliver, monitor, review, and document care (Cheah, 2000).

Figure 2 Conceptual Framework



Adapted from King's conceptual framework and theory of goal attainment (Husting, 1997, p. 16 – 17).

Clinical pathways enable nurses to work in a collaborative way with other professionals in order to maximize benefits to patients and families.

King's theory has been widely applied in nursing practice. In a recent review, Sieloff, Frey, and Killeen (2000) found that the systems framework theory has been used with patients across many age groups, nursing specialties, care settings, models of care delivery, cultures, and in multidisciplinary research. Goodwin (2002) utilized King's conceptual system, transaction system, and theory of goal attainment for an advance directive decision-making model. He found that by incorporating this model into practice, both the nurse and client achieve mutual goal achievement, which results in increased client autonomy and self-determination. Daniel (2001), Mahon (2001), Lockart (2000), and several other researchers have utilized King's theory of goal attainment in their research. Daniel (2001) utilized King's theory of goal attainment for a qualitative, descriptive study exploring the perceptions of five young adults living with chronic inflammatory bowel disease (IBD).

The literature review has further identified that the conceptual system and theory of goal attainment have been used in nursing specialties in ten different cultures and in twenty diversified work settings. Several publications demonstrate advancement of King's work in other areas of general integrated health care, such as advocacy (Bramlett, Gueldner, & Sowell, 1990), case management (Tritsch, 1996), decision making (Brooks & Thomas, 1997), discharge planning and managed care (Hampton, 1994).

One of the strengths of King's conceptual system and theory of goal attainment is that the process of nursing has always been an integral component. According to King (1992), the nursing process is a system of interrelated actions that represent method, and the theory of goal attainment is a process of human interaction that represents theory.

Norris and Frey (2001) identified the language of critical thinking in an early diagram by King (Daubenmire & King, 1973) depicting a methodology for the nursing process. The application of King's work to the process of nursing has been detailed in many texts addressing nursing theory in practice (Alligood & Tomey, 2002; Fawcett, 2000; Parker, 2001).

Fawcett (2000) identified more than 40 research publications, and further identified each project as to its descriptive, correlational, or experimental design. Although early writings by King emphasized more quantitative research approaches, she acknowledged the contribution of qualitative research in discovering knowledge and supported the use of both methodologies (Fawcett, 2001).

The concepts of King's (1981, 1988, 1991) model as they apply in the current investigation are described in the following sections.

Application of Conceptual System to Current Study

In the current study, the individual is viewed as the patient, nurse, doctor, allied health worker, patient's family member or friend, or health-care professional. The relationships between these individuals form the interpersonal system.

All human activities that link person to person, and person to environment, are a form of communication, and communication is a vital concept in professional nursing. Nurses are an important part of the multidisciplinary team as they are available to patients 24 hours a day, so communication between nurse and physician, nurse and allied health professionals, and nurse and family members is essential for safe and effective care of patients.

According to King (1981), interpersonal relationships occur through individual perceptions that influence both life and health. It is important, therefore, for the nurse to gain accurate information about the clients' perception of their health care situation.

Perceptions of the nurse and the client influence the interaction process. King (1981) goes on to say that mutually agreed-upon goals can only occur if the nurse and the patient interact based on these perceptions. It is essential for nurses caring for patients with TURP, therefore, to understand what the person is experiencing, and what the person's concerns are, in order to facilitate goal attainment and optimal health. Similarly, the clinical pathway of TURP allows nurses to evaluate perceptions of TURP patients and to help them to have optimal achievement of stated outcomes.

Communication is the main key to facilitating mutability and trust between the patient and the health care team, and is a means of validating perceptions, establishing patient priorities, and moving interaction processes towards goal setting. King (1997) stated that communication is the interchange of thoughts and opinions among individuals. To be effective, communication must take place in an atmosphere of mutual respect and desire for understanding. Communication is influenced by the interrelationship between a person's goals, needs, and expectations, and is a means of information exchange in one's environment.

Clinical pathways serve that purpose, where members of health care teams communicate patient care goals with each other. Pharm (1997) stated that the goal of clinical pathways is to optimize patient outcomes. A primary purpose of clinical pathways is to guide patients through their episode of care by providing a framework for daily care and clinical decision-making by the multidisciplinary team. Clinical pathways are considered as interpersonal systems, interacting with other systems in order to ensure standardization in practice. All of these interactions influence patients' health and recovery, as all care aspects are well coordinated, delivered in a timely way, and communicated clearly to the patients and families. The multidisciplinary team

collectively sets the goals, which are based upon guidelines and evidence, thereby permitting decision making and on-going evaluation.

One of King's concepts, perception, is widely applied in this current investigation. King discusses interactions and the formulation of perceptions that occur within the three related systems: individuals, groups, and society. The role of perception and its importance in the prevention of conflict and confusion in nurse-patient interactions is the central idea incorporated into this study design. Perception is unique to each human being (King, 1983). It is a process of organizing, interpreting, and transforming information from the senses. Perception gives meaning to an individual's experiences, represents image of reality, and ultimately influences behavior. Each person perceives according to his or her interpretation of a person, situation or event.

In the current study, the social systems are the patients requiring TURP at AKUH and the multidisciplinary team who designed the clinical pathway and are involved in patient care from admission to complete recovery of health. The clinical pathway of TURP achieves common health goals for TURP patients by using multidisciplinary approaches, including patient participation in the goal setting process. Health team members use decision-making processes to achieve the set targets in the health delivery model, with patients participating in their decision making process.

Application of Theory of Goal Attainment to Current Study

King's conceptual framework and theory of goal attainment are based on her philosophy of human beings interacting with their environment over time and in any culture. "Because they are timeless and not culture bound, the framework and theory will continue to provide structure, process and outcomes in nursing and health care in the twenty-first century" (King, 1994, p.32).

King has demonstrated linkages between the theory of goal attainment and the traditional nursing process. King (1993) views the traditional nursing process as a system of interrelated actions, the method by which nursing is practiced. In contrast, knowledge of the inter-related concepts in the theory of goal attainment provides the theoretical basis for nursing practice. Nurses, as professionals, play a major role in patients' recovery and well being. In traditional practice they frequently utilize the nursing process or its variations as a framework for promoting the health of individuals. Utilization of the nursing process enables them to conduct comprehensive assessments on patients, make diagnoses, set realistic goals, and evaluate outcomes. Nursing process in clinical practice creates a distance between nursing practice and the practice of other health professionals. Because physicians, physiotherapists, dietitians, social workers and occupational therapists do not review nursing records to evaluate patient outcomes unless nurses communicate the same to co-workers, these other professionals remain ignorant of nursing actions and interventions.

This raises many questions among members of the nursing profession, such as, who reads those care plans? Who benefits from their documentation? And what if such plans are not made? In spite of such questions, nursing practice in Pakistan continues to use the same traditional ways of delivering and documenting patient care, and it is precisely the breakdown of communications, interactions and transactions within the existing frameworks of health care delivery in Karachi, which has produced the need to introduce an alternative model of health care. Recently, nurses have taken a step toward a collaborative approach, with some innovative attempts to enhance the exchange of relevant information to colleagues. It is hoped that clinical pathways will provide opportunities to open, or at least make semi-permeable, the boundaries containing the subsystems delivering care to patients. Herring (1999) stated that clinical pathways

provide a change in the traditional approach to nursing care, and are viewed as a new approach for planning, implementing and documenting nursing care.

King (1996) stated that there is a need to focus on the organization and utilization of a nursing knowledge base, and a validation of knowledge about concepts relevant to nursing situations. King (1996) put particular emphasis on the nurse's ability for critical thinking, observation of behavior, and collection of specific information essential for decision-making based on the knowledge available, to meet some of the needs of individuals at a particular point in time (Norris & Frey, 2001). The use of knowledge and critical thinking results in decisions that are implemented in professional nursing practice and which lead to better outcomes for patients. Clinical pathways serve the concepts of critical thinking, utilization of nursing knowledge, clinical judgments and decision-making in order to improve patients' health. The component of critical thinking by nurses and other health team members is not only involved at the designing phase of the clinical pathways but during the implementation phase as well, when health team members actually utilize the clinical pathway on patients when recording variances in patient care and rationalizing the reason for these variances. The delivery of nursing care to patients, therefore, becomes a process of thinking as well as doing, as nurses continuously monitor variances in the use of clinical pathways, and work to prevent such variances recurring by monitoring patient outcomes. In contrast to the traditional approach to the nursing process as a system of interrelated actions, King's (1996) perspective of the process of nursing reflects the science of nursing, which enables critical thinking to discover the rationale of actions taken. Clinical pathways provide such qualities.

Goal attainment needs ongoing evaluation. According to King (1996), goal attainment can improve or maintain health, control illness, or lead to a peaceful death. If

goals are not attained, the nurse needs to re-examine the process of nursing, critical thinking and transaction (Alligood & Tomey, 2002). Similarly, the variance analysis process in clinical pathways is a goal evaluation tool. Cheah (2000) stated that analysis of variance is a powerful audit tool because all aspects of patient care are continuously reviewed and revised. Improvements in the quality of care are achieved through continuously redefining the pathways to reflect current best practices.

Application of the Transaction Process Model to the Current Study

The final step in King's interaction process is transaction, which involves bargaining, negotiating, and social exchange. The nurse, patient, and other health care workers presumably share a frame of reference and then set mutual goals. Goal attainment is the salient factor of King's theory, and it is only through nurse-patient interaction and transaction that mutual goals can be set. Once the goals are set, the nurse and patient collaborate to formulate the means by which the goals can be attained. Transactions are a process of interaction in which human beings communicate with the environment to achieve goals that are valued. Transactions are goal-directed human behaviors. Similarly, with clinical pathways the emphasis is on achievement of personal, interpersonal, and social goals, which are based upon the best evidence from the literature and are agreed upon by all who are part of the conceptual system. Such goals set for TURP patients in clinical pathway intervention include enhancing quality by reducing occurrence of complications during hospitalization, reducing length of stay, improving co-ordination among health care providers, reducing costs, and improving patient and staff satisfaction.

The other feature of this transaction process is that it begins with perceptions, judgments, mental actions and reactions of all individuals. Perception, communication, and transaction are basic concepts that explain interaction between individuals and

groups in society. Similarly, the multidisciplinary team in this transaction process assesses and applies the knowledge of concepts and processes while developing the clinical pathway. However, culture, socioeconomic status, age and condition of individual patients do influence these perceptions considerably. The critical concepts applied in this process were perception, self, coping, interaction, role, stress, and power of decision making and learning (Johson & Webber, 2001).

Discussion of Conceptual Framework

The conceptual framework of the current investigation (as illustrated in Figure 2) is derived from the concepts behind King' conceptual framework and theory of goal attainment. The first part of the model shows that in the current investigation, the patient is the central focus of the system. Therefore the personal, interpersonal, and social systems should operate as a whole to achieve the maximum benefits for the patient. When all members of the conceptual system communicate, interact, and transact, and use critical thinking for decision-making, they design an integrated clinical pathway. The outcome of this model is patient-centered care, which reduces variation in the practice of the caregiver and maximizes health-related outcomes for the patient. Clinical pathways are patient-focused, and outline the goals of the patient from admission to discharge. When the patient enters the health care system, health team members deliver care as stated in the clinical pathway. According to Cheah (2000) clinical pathways are essentially multidisciplinary management plans that display goals for patients and provide the corresponding ideal sequence and timing for staff interventions in order to achieve those goals with optimal efficiency.

The researcher perceives that if the integrated clinical pathways are developed as suggested by the literature, where all multidisciplinary team members play an active role in designing, implementing and evaluating the clinical pathway and, furthermore,

the focus of the clinical pathway is on improvement of clinical quality, then the perceived benefits outlined in the last part of the model will be the outcome. Nish (2000) stated that the benefits achieved from the utilization of clinical pathways include enhanced multidisciplinary collaboration, increased consistency in practice, increased coordination in care activities, cost reductions, efficient and effective resource utilization, effective patient education and management of patient's expectations, continuous quality improvement, and ongoing review of practice and outcomes through variance tracking and variance analysis. The outcomes of clinical pathways on cost (Denise, 1996); quality care (Default, 1999); multidisciplinary collaboration (Stratton, 2000); length of stay (Pritts, Nussbaum, Flesch, & Fegelman, 1999); integrated and documentation, tracking and analysis of variances to improve standards of care, patient satisfaction, resource utilization and staff satisfaction (Nish, 2000) have been discussed in previous sections.

In her theory of goal attainment, King (1981) also focuses on ongoing evaluation and re-examination of goals to assess progress. The developed conceptual framework also illustrates that the clinical pathway examines patient's progress by variance recording and variance management, therefore the clinical pathway also serves as a clinical audit tool and monitors patient's progress and well-being.

In conclusion, the conceptual framework illustrated in Figure 2 is a patient centered model of care, whereby an integrated clinical pathway is designed, implemented and evaluated by all members and partners of the conceptual framework. The overall goal of this model is to improve core processes in the delivery of patient care, and to enhance patient and staff/caregiver satisfaction as a result of multidisciplinary collaboration. This model, therefore, benefits both consumer and provider.

Advantages of Applying King's Theory to Current Study

King's theory of goal attainment is appropriate for the nursing of patients requiring TURP in the inpatient and outpatient setting of AKUH by utilizing the intervention of clinical pathway. TURP is a surgical procedure which requires the patient to assume responsibility for the daily implementation of a recommended regimen, developed by all the stakeholders of the conceptual system. King's theory demands collaboration among all the health team members while setting mutual goals and strategies for patients in the clinical pathways. It also demands patient's participation in achieving those goals, which can lead to increased commitment of patient to self-care.

King's framework for nursing includes the individual, the group, and the family, and inclusion of these three systems in nursing care is important. The nurse deals with the individual patient, delivering specific aspects of care based on the patient's individualized needs. The nurse also deals with groups of patients during patient education sessions, and considers families to be an important recipient of nursing care, because they are affected when one of their members is sick. In health care settings in Pakistan, family involvement in patient care is very high compared to health care settings in some other countries, as they are continually present with their sick family member. Similarly, in the clinical pathway model, the nurse continually interacts with all systems from the patient's entry to the health care system until discharge from the hospital, and even at home until complete recovery is achieved.

King emphasizes the value of critical thinking in nursing practice. Her concepts offer a way of thinking about nursing, a way of observing behavior, and a way of collecting specific information to meet individual needs. Critical thinking allows nurses to make decisions and implement these decisions in professional nursing practice for improved delivery of patient care (Norris & Frey, 2001). When nurses first meet

patients and interact with them, they conduct a comprehensive assessment by gathering data. Through the critical thinking process they identify key needs of patients and plan goals for optimum health recovery. Similarly, a clinical pathway is a goal-setting process within a specified time frame. These goals are set on the basis of evidence-based practice. Nurses ensure that all health team members work hard to provide care according to the set parameters for optimum recovery of the patient. Critical thinking is also provoked when nurses record a deviation from the normal, based on their clinical judgment if the set goals are not met as planned. These deviations are recorded as variances, and variance management is planned to prevent such variances recurring. In utilizing clinical pathways, nurses must employ analysis, synthesis, verification and interpretation; and this critical thinking demonstrates a nurse's professional accountability as well as their commitment towards provision of quality nursing care. King explicitly links critical thinking to the intellectual acts of judgment and decision-making.

King's (1993) definition of health, another component of her theory, is highly applicable to the nursing management of TURP patients through clinical pathway intervention. In defining health, she emphasizes interpersonal relations, holism, dynamism, purposefulness, and reciprocity. These concepts help nurses and patients to gain cognitive clarity about a shared environment. According to Husting (1997), King's theory of goal attainment addresses interpersonal relationships. In today's technical, highly paced health care system, the psychosocial needs of the patient are sometimes forgotten. Adoption of an interpersonal model, such as King's, can highlight the nurse's awareness of the importance of caring. Interaction and caring are emphasized in the clinical pathways model, where nurses practice therapeutic communication to achieve health care outcomes.

King underscored the importance of nursing process as both method and theory, stating that “Nurses are first and foremost human beings that perform their functions within a professional role. It is the way nurses in their role, do with and for individuals that differentiates nursing from other health professionals” (King, 1995, p. 26). Similarly, in clinical pathways, nurses play a leading role in demonstrating caring attitudes for patients, and helping relationships for other health team members. There will be occasions when the goals of the patient and nurse are incongruent, and rejection of health care occurs. Based on King’s assumptions, the nurse must then provide the patient with information on the consequences of non-compliance, and then let them decide their course of action.

The transactional model of King’s theory gives autonomy to the nursing profession and provokes critical decision-making, when they interact and communicate with other professionals the formulated goals for patients’ recovery. Through this collaborative process is the opportunity for nurses to demonstrate critical decision-making based on evidence.

The final advantage of King’s theory is that it is easy to understand. The major elements are clearly presented, and the model does not involve numerous, or complex steps. The relative simplicity of the theory makes it easy to introduce into the current investigation. Frey (2002) stated that Imogene King is universally recognized as a pioneer of nursing theory development. Her theory has been implemented in a variety of service settings. Young, Taylor and McLaughlin-Renpenning (2001) stated that King’s theory reflects her belief that nursing knowledge should be modified constantly by updating outmoded concepts.

Conclusion

King's conceptual framework and theory of goal attainment provides a useful structure for the current investigation by utilizing a clinical pathway for the care of the TURP patients. The discussion in this chapter has demonstrated that the application of King's theory in the form of clinical pathways would be an effective replacement for the traditional nursing practice at AKUH, Karachi. The salient feature of King's theory is that it provides direction for nursing practice by emphasizing the processes of multidisciplinary collaboration, communication, interaction, ,transactions and use of critical thinking, which are the foundations for promoting and maintaining the health status of individuals and families. Nurses who interact with other systems will influence the health outcomes of the patients/families during their hospital stay and beyond discharge, with the result that the patient becomes his own health manager.

CHAPTER FOUR
METHODOLOGY

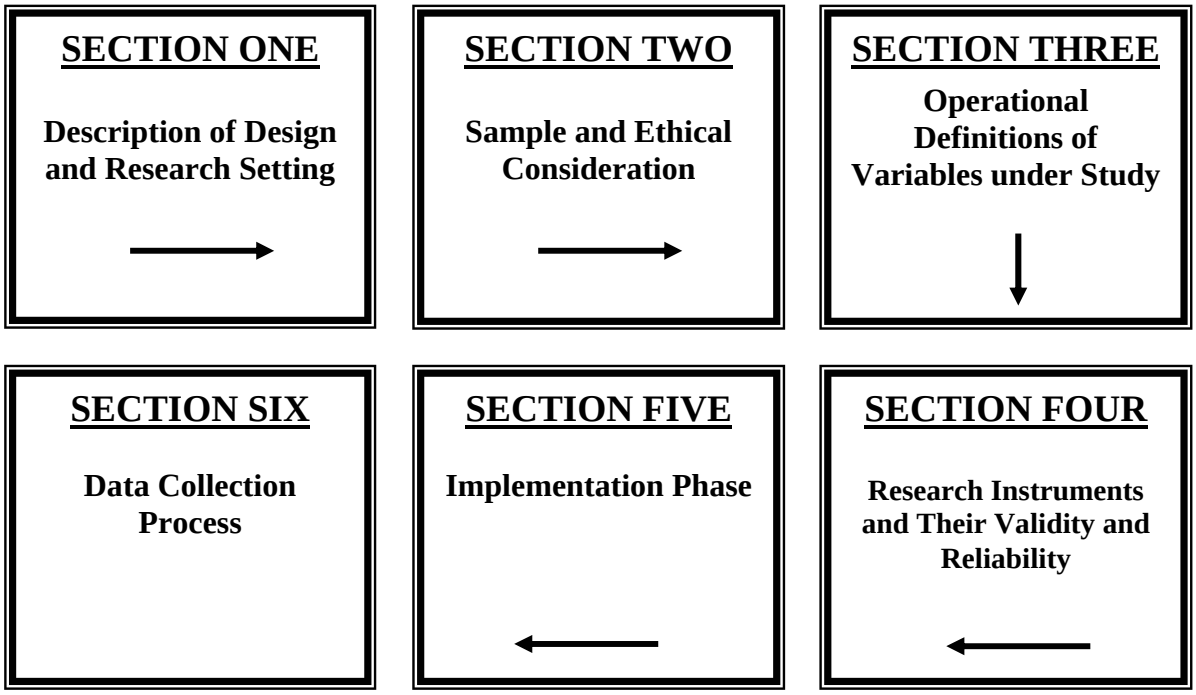
Introduction

The literature review has revealed the many benefits which have been reported from clinical pathway implementation in western health care settings. This model of practice was first implemented in engineering fields before gaining popularity across hospitals and healthcare organizations in the United States, Australia, the United Kingdom, and Singapore. It is also apparent from the literature review that the use of clinical pathways has become increasingly popular over the last two decades. Some of the benefits, particularly those related to decreased length of stay and decreased cost, have been widely tested and proved in many western hospitals. However, these concepts are new for health settings in developing countries, where they are neither tested nor utilized as a tool for improving clinical practice and patient and staff satisfaction. The lack of previous research into the topic suggests that a multilevel investigation is necessary to accurately explore the benefits of clinical pathways. The design and method of the research project should therefore be flexible enough to obtain data that can address the multiplicity of issues surrounding the topic (Polgar & Thomas, 1995). Fowler (1995) asserted that the design and choice of method in research should clearly reflect the core data requirements of the research questions, and recommended clearly restating the primary aims, purposes, and questions of the research project to assist in choosing a research design and method that will facilitate specific data requirements.

This chapter presents and discusses the methodology and procedures used for the practical implementation of this research study. It is divided into six sections, as

illustrated in Figure 3, as follows: description of study design and selection of research setting; selection of sample and ethical consideration; operational definitions of study variables and other terminologies used in the current investigation; detailed description of development of research instruments, ensuring their validity and reliability; implementation phase of the study; and finally, details of data collection processes. The discussion is followed by an overall summary of the methodology.

Figure 3: Methodology and Procedures



Section One: Overview of Study Design

The first section of this chapter provides an overview of the study design, which was quasi-experimental in nature. This discussion is followed by a detailed overview of the research setting, the Aga Khan University Hospital, which is located in Karachi, Pakistan.

DEVELOPMENT OF RESEARCH DESIGN

The primary aim of this study is to examine whether patients undergoing TURP in Pakistan can achieve the same benefits of clinical pathways as have been reported in western health settings by the literature. The other aim of the current investigation is to improve multidisciplinary collaboration among health team members; streamline documentation by integrating medical and nursing records; and enhance consistency, continuity and coordination of core activities through clinical pathway intervention. An additional purpose of the research is to develop a clinical quality model that can be implemented and subsequently evaluated in clinical practice settings throughout AKUH, with the potential to extend the clinical model to other hospitals in Pakistan.

The fundamental research questions to be addressed by the current investigation are: (1) What is the impact of clinical pathways on clinical quality (CQ) in patients requiring TURP at AKUH?; (2) What is the effect of clinical pathways on variances in all aspects of patient care?; (3) What is the effect of clinical pathways on length of stay of patients having TURP?; (4) What is effect of clinical pathways on cost of hospitalization of patients having TURP?; (5) What is the effect of clinical pathways on patient satisfaction; and (6) What is the effect of clinical pathways on staff satisfaction?

In the present investigation, a quasi-experimental design with non-equivalent groups was utilized to answer the research questions, objectives and hypotheses. A quasi-experimental design has two of the three features required of experimental designs, which are control, randomization, and an intervention, which is manipulated. In the current study, the study intervention was the clinical pathway for TURP patients, which was administered to the experimental group, and a comparison of data from the control and experimental groups was conducted. However, the third feature of experimental designs—randomization of subjects and random allocation to each group—was not possible because of the nature of the study. It was difficult for the

researcher to allocate subjects to both groups simultaneously and maintain control of the research setting, sample and data collection methods.

A non-equivalent experimental group is one in which the subjects are not assigned to the treatment and control group by random means (Norwood, 2000). This study followed a non-equivalent control group study design because neither the control group nor the experimental group received a pretest. Patients who were treated by surgeons performing TURP during the time period August 1, 2001 to March 31, 2002 constituted the control group. This group of patients was treated utilizing the normal protocol, and received medical and nursing care as per existing AKUH standards. All policies and procedures considered necessary by surgeons for the successful completion of TURP were performed for this group of patients. The experimental intervention of clinical pathway for TURP was withheld from this group, and staff and patients were unaware of their participation in the research project.

RATIONALE FOR DESIGN

In the present investigation, the use of a quasi-experimental design was necessary to meet the overall aim of generating a comprehensive methodology to address the research variables by explaining and describing relationships, clarifying why certain events happened, and examining the cause and effect relationships between independent and dependent variables. According to Burns and Grove (1995), quasi-experimental designs tend to be more 'natural' than true experiments and thus have wider generalizability. As this study was conducted in a busy clinical facility, there was a greater possibility that if this intervention were considered to be effective, then it could be introduced in similar clinical areas.

Experimental designs, with their strict controls to eliminate extraneous variables due to environmental factors, are the most powerful method of examining

causality, as they are either conducted in the clinical setting or in the laboratory to provide the best evidence of a causal relationship (Wood & Haber, 1998). In social science research, however, similar clinical areas cannot be used, for ethical and practical reasons (Sim & Wright, 2000). Therefore, a quasi-experimental design was developed to provide the researcher with alternative methods for examining causality in situations that were not conducive to experimental controls.

A quasi-experimental design was considered to be the best choice for this study because it has the capacity to facilitate the search for knowledge and examination of causality in situations where complete control is not possible, an ideal feature for investigating research problems within the sphere of nursing and healthcare. Another reason for using this design was that a randomized control trial to assess the effectiveness of pathway verses non-pathway groups was not administratively feasible.

OVERVIEW OF METHODOLOGY

As stated above, a quasi-experimental design was considered the best methodological design to meet the research objectives in the natural setting of AKUH. Furthermore, the researcher in this investigation had very comprehensive aims, which were achievable using this study design. Selecting an appropriate research method and conceptual framework requires consideration of how best to collect the type of data necessary to answer the research question (Rea & Parker, 1997). The researcher identified the need to use various instruments and data collecting techniques to adequately cover the phenomena of interest. Data for this research project were collected using the following tools: a variance tracking instrument (quantitative data); a patient satisfaction survey (qualitative and quantitative data); and a staff satisfaction survey (qualitative and quantitative). Combination of the above methods enabled the researcher to collect

appropriate data and to gather sufficient scientific knowledge for the current investigation.

This study will have an impact on the health of patients undergoing TURP at the Aga Khan University Hospital, which is situated in Karachi, Pakistan. The following section will give an overview of Pakistan and its health care systems. It will also discuss the Aga Khan University as a research setting, and the status of the surgical procedure of TURP in Pakistan as well as at AKUH. The section will conclude with a discussion of the financial systems of AKUH.

PAKISTAN AS A STUDY SETTING

Pakistan emerged on the world map on August 14, 1947. The official name of Pakistan is the Islamic Republic of Pakistan. It is situated in the south of Asia, with India to its east, Iran to its west, and Afghanistan to its northwest. China is also a close neighbor of Pakistan. The Arabian Sea connects Pakistan with Saudi Arabia and the Eastern-African countries. The southern sea route joins it with Sri Lanka, Malaysia and Indonesia (Shariff, 2001).

Pakistan is a vast country, with an area of 803,940 km^2 and a land area of 778,720 km^2, which is nearly four times the size of the United Kingdom. According to the census of 2001, the population of Pakistan is 140.47 million and the growth rate is 3% per annum. Islamabad is the federal capital. The country comprises four provinces: Balochistan, the Northwest Frontier Province, Punjab and Sindh. Karachi, a large metropolitan city of Pakistan, is situated in Sindh (Ed, 1997).

According to Andrew (1994) and Shariff (2001), Pakistan is 95% Muslim. Its currency is the Pak rupee, and the average per capita income is AUD$792 per annum. Urdu is the national language, and English is the official language. Andrew lists the principal exports of Pakistan as cotton and textile goods, rice, leather items, carpets,

sports goods, fruits, handicrafts, and fish. Its main imports are industrial equipment, vehicles, iron ore, petroleum, and edible oil. The literacy rate is 49%. Popular games are cricket, hockey and squash, and the national flower is the Jasmine (Ed, 1997).

Shariff (2001), in the Pakistan Almanac, states that Pakistan has a variety of climates. Natural factors contribute to differences in climate in different parts of Pakistan, giving it the hottest, as well as the coldest, parts of the world. Very often, the mercury rises above 120°F in summer in the districts of Sibi and Jacobabad. The highest temperature recorded here was 127°F. The temperatures in the northern hills are, on the other hand, below freezing point. In the plains, the temperature ranges between 110° and 112°F in summer. Winters in Pakistan are very pleasant, with the average temperature ranging between 40° and 50°F. Pakistan is an agricultural country, with 75% of the population depending directly on agriculture (Pakistan Almanac, 2001, 2002).

Health problems in Pakistan

The problems of health care in Pakistan are directly linked to the prevailing social, economic and political systems that determine the allocation of resources within or outside the health sector. According to Khan (2000), health indicators of Pakistan are as follows: life expectancy, 62 years; crude death rate, 8/1000; crude birth rate, 35/1000; under 5 mortality rate, 120/1000; infant mortality rate, 91/1000; and natural rate of growth, 3% per annum. According to Mohydin (1998), poor nutritional status is the major health problem of many among the Pakistani population. One out of every three children in Pakistan is malnourished, and about 8% of children less than five years of age are anemic. Furthermore, one out of seven older adults is obese or overweight, one in three adults is underweight or severely thin, and adult women are more anemic than men.

Chronic diseases common among Pakistani people include hypertension, which affects one out of every three persons over 45 years, and diabetes Type 2, which affects one out of ten women. Chronic bronchitis affects one out of ten rural women over 65 years of age, and about 5% of men over 60 years of age have signs of renal impairment. About 52% of women who have delivered a baby in the previous six months have evidence of tetanus. Similarly, drug abuse has emerged as a public health problem, while malaria and tuberculosis continue to be major threats (Sharif, 2001).

Shariff (2001) stated that child health is another major health concern; about one quarter of children are in only fair, or poor, health. Children less than five years of age have, on average, six episodes of cough with fever a year and between five and twelve episodes of diarrhea annually. About 40% of children between ten months and five years of age are immunized against measles (Akbar, 1998). Disabilities are also important health concerns. Of those over 65 years of age, hearing impairment is common, about 15% are blind, and over 65% have cataracts (Shariff, 2001).

Health care in Pakistan

Akbar (1998) commented that the health care system in Pakistan can be very simply described as highly inequitable, and because it is based upon a western-oriented curative care model, it certainly does not fulfill the requirements of the great majority of its people.

According to Sharif (2001), Pakistan has an extensive health delivery system that is a mixture of government and private facilities distributed throughout the country. The existing national network of medical services consists of 91,823 doctors, 4,175 dentists, 37,623 nurses, 22,528 paramedics, 5,619 lady health workers. There are 93,907 hospital beds, 5,171 basic health units, 531 rural health centers, 856 maternity and child health (MCH) centers, and 4,635 dispensaries offering primary health care facilities. The big

hospitals are mainly located in the urban areas of the country and total 876. The population ratio coverage works out to 1,529 persons per doctor, 33,629 persons per dentist, 3,732 persons per nurse, and 1,495 persons per hospital bed.

Status of TURP in Pakistan

TURP is a common, highly-documented urological procedure performed at any urologic center for bladder outlet obstruction for benign prostate hyperplasia (Holtgrewe, 1995). In Pakistan, most TURP procedures are performed for absolute indications, such as acute retention of urine, and patients are not routinely operated on for relief of prostatic symptoms. According to Qamar (1999), from May 1997 to October 1997 a total of 10,727 patients attended the urology outpatient department at the Pakistan Institute of Medical Sciences (PIMS) in Islamabad. Around 300 of these patients had urinary retention symptoms related to BPH. According to Black et al. (2001), the patient usually seeks medical care when he is bothered by urinary retention.

In a study conducted with a sample of 235 patients, Khan (1991) found that in 43% of patients the selection criteria for TURP were symptoms of prostatism, and in 52.7% acute chronic retention. Cheema (1999), in his study, found that there was significant improvement in quality of life after TURP. In his group A, 35% patients were pleased, 60% patients were mostly satisfied, and 5% of patients had a mixed response due to persistent urge and incontinence at 12 weeks post-TURP. Cheema found that 83% of those in group A and 86% in group B showed improvement in symptoms after TURP.

THE AGA KHAN UNIVERSITY HOSPITAL AS A RESEARCH SETTING

The setting for this study was a naturalistic setting, which included ambulatory and surgical inpatient units (general ward, semi-private and private wings) of AKUH, where TURP patients were admitted. Robert and Taylor (2002) have stated that data acquired

from a natural setting has the advantage of increased ecological validity because the phenomenon of interest is observed in its real situation.

The Aga Khan University (AKU) was established in 1983, and is the first privately-funded international university in Pakistan. Currently, the university comprises the Faculty of Health Sciences (FHS), consisting of the School of Nursing, established in 1980, and the Medical College, established in 1983; the University Hospital, commissioned in 1985; and the Institute for Educational Development, set up in 1993. The university strives for quality, international standards, and relevance in all of its programs, and selects its faculty, staff and students on the basis of merit irrespective of gender, race, religion or domicile.

The School of Nursing offers education and training for the three-year Diploma of Nursing, and the two-year post-basic and four-year generic programs for the Bachelor of Science in Nursing. It implemented a Master of Nursing program in 2001. The School of Nursing is one of the initiatives of the university for the advancement of women. The School of Nursing has expanded beyond its AKUH campus at Karachi, and now offers a program for advanced nursing studies in East Africa (Kenya, mainland Tanzania/Zanzibar, and Uganda). This is the University's first academic initiative overseas. The advanced nursing studies program provides continuing and higher education for working nurses through a combination of on site and distance learning strategies using a modular curriculum approach. It also aims to utilize innovative curricular and program delivery strategies, and has developed an international level capacity to conduct relevant nursing and health related research.

The Medical College offers a five-year undergraduate program, of which Community Health Science constitutes an important and extensive component (20% of curriculum time). The courses are designed to prepare graduates for careers in Pakistan

and other developing countries. The College also provides postgraduate professional development through internship, residency and fellowship programs in sixteen disciplines. The Master of Science in Epidemiology program was introduced in 1996. A broader Masters degree with two streams, one specializing in epidemiology and biostatistics, and the other in health policy and management was introduced in 2000. A program for Doctorate of Philosophy in Health Sciences, specializing in basic and applied biological sciences, began in October 1999. The graduate programs include extensive course work and a research-based thesis.

Another entity of the Aga Khan University is the Institute for Educational Development (IED), which was established in July 1993 in Karachi. It is the first initiative of the university outside the field of health sciences. The Institute aims to contribute to socio-economic development by improving the quality of education through human resource development, institutional capacity building, research and dissemination, and policy analysis and advocacy. AKU-IED seeks to achieve its objective of school improvement by offering a variety of academic programs to its students, who are basically in-service school teachers and education managers.

The Aga Khan University Hospital (AKUH) is a 500-bed tertiary care hospital, which is also the principal site for clinical training for both the Medical College and the School of Nursing. AKUH is equipped to diagnose and manage patients with unstable complex clinical states, in response to referrals by physicians from Karachi and other parts of Pakistan. It has established a reputation in Pakistan for the quality of clinical care and the accuracy of its clinical laboratory, which provides access to its services through centers in several cities. The major aims of AKUH are to improve the health of people by providing high quality care to patients and their families, to raise the standard

of education provided, particularly to women in order to raise the status of nursing in Pakistan and other developing countries, and to promote research.

The AKUH has been continuously striving for high quality care, since it was commissioned in 1985, to achieve its mission, vision, and philosophy. Concepts of Total Quality Management (TQM), Continuous Quality Improvement (CQI), and Quality Assurance (QA) have been embedded since 1992. The AKUH is considered a tertiary care center in Pakistan and its neighboring countries.

Ambulatory and surgical units

The current investigation was conducted in the ambulatory clinic of the urology and surgical units of AKUH. All surgical patients who were potential subjects in the study were examined at the urology clinic by urology surgeons. A total of 15 urology clinics are conducted per week; a total of 9,197 patients were examined by seven urology consultants in the year 2001. Patients confirmed by the consultant as requiring surgery are referred to the pre-anesthesia clinic, where it is determined if they are fit for surgery. If a patient requires cardiac consultation or other diagnostic procedures, they are booked for further investigations, which are reviewed by surgeons and anesthetists before deciding on the date of surgery. Once the surgeon confirms the date of surgery, the online booking for operation and inpatient accommodation form is completed for the patient's admission. AKUH has three types of bed categories (private, semi-private and general ward) for inpatient hospitalization. The general wards have five beds, no air-conditioning or telephone facilities. Semi-private wards have two beds, air conditioning, telephone facilities, washroom facilities, and food is provided according to patient's own choices. Private bed category gives the patient access to a single room, and several service facilities similar to the best five star hotels.

Status of TURP at AKUH

As previously discussed, TURP is a common surgical intervention for the treatment of BPH. The baseline data obtained from the Hospital Information Management System (HIMS) show that a total of 287 TURPs were performed in the years 1999 and 2000 at AKUH. The breakdown according to age was 12 patients aged between 41–50 years, 68 patients between 51–60 years, 122 patients between 61–70 years, and 85 patients above 70 years. The data further revealed that the average length of stay was 5.0 days, ranging from the lowest at 3.4 days to the highest at 7.0 days. The average cost of a patient's hospitalization was PKR47,454 (AUD$1531).

Financial systems at AKUH

It is important to be fully informed of the complex financial systems at AKUH in order to understand the results of the analysis related to financial variances, which will be presented later.

As discussed earlier, AKU is composed of different entities, the hospital (AKUH), the Institute for Educational Development (IED), and the Faculty of Health Sciences (FHS) comprising the Medical College and School of Nursing. Each of these entities has separate account codes allotted to them differentiating them from each other in the general ledger system. Revenues and cost centers are identified based on the organizational structure, operating environment, and unique activities of each of these entities. At AKUH, a cost center is a department whose activities result in incurring cost (e.g., personnel and purchase departments), whereas a department whose activities result in generating revenue is called a revenue center (e.g., laboratory). Both revenue centers and cost centers receive monthly statements of their respective revenues and expenses. An example of one such report is the monthly Budget Variance Report (BVR).

Budget process

The budget at the Aga Khan University (AKU) is prepared for a one-year period from January to December. The budget cycle of the Aga Khan University Hospital (AKUH) for the coming year begins in April of the current year.

The operating budget process starts with a review of the three to five year plan to determine the projects that are to be implemented over the next year. In order to define the budget, the Budget and Planning Department invites all departments within the hospital to formulate their goals and objectives, which will provide the framework for future program consideration and resource allocation. The departments are asked to ensure that their goals and objectives relate to the mission statement, do not conflict with the general direction in which the institution is leading, and are attainable and measurable.

Departmental goals and objectives are then submitted for review to the Hospital Budget Advisory Committee (HBAC), which is chaired by the CEO and comprises senior physicians, the Director of Nursing, and other senior directors of the hospital. The HBAC ensures that departmental goals and objectives reflect the AKU mission and philosophy, and are synchronized with the university's strategic plan. Once the goals and objectives have been reviewed and approved by the HBAC, they are forwarded to the Budget and Planning Department (B&P).

The next step is the preparation by B&P of the budget guidelines and financial assumptions. The statistics budget is used to project the volume for the coming year. The entire budget is based on these parameters. B&P reviews the national and local situation as it affects AKUH operations, by taking into account such factors as rate of inflation, exchange rate, and so on. The Budget and Planning Department also considers the marketing department's feasibility report, which outlines AKUH's service charges

as they relate to those of competing institutions, and as they relate to the target population's willingness and ability to pay for such services. The feasibility report also details progress made in the last few years, particularly the previous year, and demonstrates where AKUH stands in relation to the achievement of the financial targets set for the next five years.

Budgetary figures are then prepared by taking into account the above key assumptions, goals and objectives, patient volumes, faculty numbers, staffing levels, and so on. Developing volume projections is considered by many to be the most crucial step in budget preparation because estimates of volume will lead to estimates of revenue and expenses (Neuman, 1997). At AKU, estimating volumes for the next year is accomplished by reviewing the amounts and types of services delivered in the previous year and modifying the previous years' statistics based upon environmental assessment and the organization's plans for the coming year; for further precision, they are adjusted for their intensity.

The projected revenue and expenses are determined by B&P based upon financial assumptions. Expenses are very closely linked with revenue, so that medical and surgical expenses are based on the expected revenues. Staffing budgets are based on models developed and agreed upon by the heads of the departments; for example, Nursing Department full time employees (FTEs) are budgeted on the basis of Nursing Hour Per Patient Day (NHPPD), while Laundry Department FTEs are calculated according to FTE/Lb of laundry (Marks, 1987).

Finally, B&P integrates the revenue and expenses with the goals and objectives, and then passes the final draft of the operational budget for submission to the Hospital Budget Advisory Committee (HBAC). The HBAC reviews these goals and objectives along with the projected volumes, revenue and expenses, and verifies their financial

validity and appropriateness. The annual operating budget relies heavily on the goals and objectives of the departments, which in turn are based on the three-year rolling plans. As is obvious from the above review outline, resources will not be allocated to those programs not in line with the strategic plan of the institution; this is considered to be the important criterion when allocating scarce resources.

The budget process is completed after the recommendations have been received by the Board of Trustees. As recommended by Cleverly (1997), the responsibility to develop the strategic plan and ensure that it is in accordance with the mission is the responsibility of the Board of Trustees of the respective institutions. In this way, the Board of Trustees of the Aga Khan University is responsible for reviewing the applied budgets and approving them. These approvals are then submitted to the requesting departments to be utilized for their forthcoming budget cycle.

Strategies for computing price at AKUH

The following strategies are used to compute the price for the services provided at AKUH, according to the policy of the Budget and Planning Department (B&P-PLAN-2.9).

Inpatient services of AKUH are divided into ward, semi-private, and private beds. Ward beds are subsidized upfront for the patients; in addition to the bed subsidy, some ancillary services, such as operating room, ICU beds, and step down beds, have a differential price structure. Semi-private air-conditioned beds are priced to ensure that the middle-income population is able to avail these services, and private beds, though competitively priced, are expected to yield a substantial surplus for the hospital in order to recover the operating cost of subsidized services.

Outpatient services include the consulting clinic, emergency room and the community health center. At the consulting clinic, specialist services are provided; these

services are priced at competitive rates, and within a specialty there is no difference between the charge for a professor and the charge for a senior instructor. Prices for different specialties vary based on competition and demand. The emergency facility at AKUH is considered to be one of the best in the city and is responsible for nearly 40% of the inpatient admissions. The pricing structure is generally uniform for all patients coming to the emergency even though the intensity of care and the length of stay of the patient vary considerably. At the community health center, general practitioners and family medicine doctors provide services; these services are at subsidized rates in order to serve the lower income population of the city.

Prices for diagnostic services are based on competitive rates, quality of services and cost. These services are generally expected to recover the total cost of provision, and are not differentiated for inpatients and outpatients. Pricing, though uniform, is also expected to yield a substantial number of outside referrals, in order to spread the fixed expenses over a larger base and generate a better surplus, as well as to keep the price competitive. Prices for pharmacy services are generally controlled, although a 10% mark-up over retail prices is applied for inpatient medications in order to recover administrative expenses. Through the establishment of a formulary, AKUH has been able to negotiate a better discount with pharmaceutical companies.

It is also AKU's objective to ensure that total costs are recovered and sufficient funds are generated to provide ongoing capital for the replacement and expansion needs of the institution. For this purpose, all proposed major new investments in equipment and programs must undergo a financial feasibility test to gauge their impact on the profitability of the institution.

AKUH attempts to respond to a sometimes unstable economic and political environment by developing annual budgets and long-term plans on a conservative basis.

AKUH imports most of its medical surgical supplies and equipment, and is, therefore, affected by changes in rupee dollar parity, while purchases of local goods and services are affected by inflation in the local market. More than 50% of the hospital's expenses are from compensation; in order to recruit and retain good quality people, staff compensation has to be competitive, tax effective, and needs to be adjusted according to inflation and other economic factors.

Computing costs of TURP surgery

The price of TURP surgeries, as with the prices of the hospital's other services and products, is computed through the specific service charge system by the Budget and Planning Department.

For some surgical services there is a package system, which offers the total cost of hospitalization to the patients. These packages are developed and offered on the basis of length of stay and use of any special prostheses; for example, lens requirements for cataract surgeries. However, TURP surgical intervention does not have such provisions, and cost estimates are derived solely from the expected length of stay. The patient must pay this estimated amount as a deposit at the time of admission. The B&P cost estimate for TURP surgical intervention is PKR40,000 for a bed in the general ward, PKR50,000 for a semi-private bed, and PKR75,000 for a bed in the private wing.

The cost computation procedure by B&P involves reviewing market trends, reviewing prices offered by competitors for the same services, and then building in a 25% margin on the overall cost of the product or service provided. Although this leads to higher charges at AKUH compared to its market competitors, the 25% margin reflects the additional high quality features offered at AKUH, which are not provided by its competitors. Items provided to patients at AKUH undergoing TURP include medical and surgical supplies, food, linen, patient clothes, and pharmaceutical items

(medications and intravenous infusions). At other hospitals, these items are provided by the patients and their families. As discussed earlier, AKUH has three types of bed categories, so the cost structure varies on the basis of the features of each category of bed. Charges for certain ancillary services such as operating room care, diagnostic tests, and surgeons fees also vary between the three bed categories.

When computing the charges through specific service charge system, B&P makes sure that the computed cost fully recovers the total service cost. Such service costs include medical and surgical supplies, employee salaries, physician fees, nursing care costs, maintenance, utilities cost, and the cost of any other areas involved in the provision of that specific service. The expenses incurred by cost drivers (supportive departments) such as warehouse, distribution and purchase, are also allocated to patient care areas on the basis of provision of their services.

AKUH increases the cost of its services every year by 6–8% to allow for economic and political instability. This has an impact on its accessibility to consumers. Furthermore, a margin is built in to overall services so that a minimum saving of 20–25% is achieved on any service. This saving is used to generate regular ongoing capital for any replacement and expansion needs of the institution.

RATIONALE FOR SETTING

AKUH was selected as the setting for this project because its system of care is well-organized in comparison to other health care institutions in Pakistan. In addition, its nursing and medical administrators are open to change and innovation, and therefore were supportive of the research project, seeing it as an opportunity to evaluate a new intervention and its impact on the quality of care to patients attending for surgery. It is important to point out that the setting did not permit random assignment to control and experimental groups because patients in both groups would be in contact with each

other, which would be a threat to the internal validity of the study. It was also inappropriate to have one group allocated to the general wards and the other group allocated to private and semi-private rooms because this would also threaten the internal validity of the study.

SUMMARY

The above section has discussed why the quasi-experimental research design with non-equivalent groups was utilized to answer the research questions, objectives and hypotheses. This was considered the best design for conducting research in a natural setting, where there would not be sufficient control to utilize a true experimental design. The section also explained that the Aga Khan University Hospital in Karachi, Pakistan, had been selected as the setting for this investigation because of its good organization in terms of its health care systems, as well as the openness to change and innovation of its nursing and medical professionals.

Section Two: Selection of Sample

This section will present an overview of the sample selection, the inclusion and exclusion criteria, the process used for estimating the sample size. It will also present the strengths and weaknesses and ethical considerations surrounding sampling in general.

IDENTIFYING THE POPULATION AND SAMPLE

The target population was all patients requiring TURP in Pakistan. The accessible population was those patients admitted to AKUH for TURP, resulting in a convenience sample of those patients. The main reason for selecting surgical patients for the current investigation was that surgical patients use a lot of resources, and the care of such patients is often variable. Nursing care can vary according to such factors as the use of

temporary nursing staff, alternative scheduling, rotating shifts, and staff-focused staffing patterns; medical care can be fragmented by changes to medical staff and on-call variations. The use of clinical pathways in such cases may eliminate or reduce these variations.

Subjects allocated to the control group were those who met the selection criteria for TURP and underwent the surgery in the period from August 1, 2001 to March 31, 2002. The experimental group was made up of patients who met the selection criteria for TURP and underwent the surgery in the period from April 1, 2002 to December 31, 2002. Data was collected first from the control group for a period of eight months, and from the experimental group for nine months.

Patients as subjects

Study data was collected from patients who met the selection criteria for TURP from August 1, 2001 to December 31, 2002. Approximately 200 patients are admitted annually for TURP at the AKUH. All patients who met the selection criteria and provided informed consent to participate in the study were included. A convenience sample of 200 patients was recruited into the study to form the control and experimental groups (n=100). Assignment to a group was based on timing of admission: the control group consisted of patients admitted during the eight month period from August 1, 2001 to March 31, 2002, and the experimental group was formed by patients admitted during the following nine months, April 1, 2002 to December 31, 2002. There had been no changes in procedure for TURP, and no changes to the personnel who performed the procedure. It is possible that some extraneous variables were introduced due to unavoidable changes to staff, equipment, and setting over the one-year period.

Inclusion and exclusion criteria

The inclusion criteria for this study were patients who were considered by a urology surgeon and anesthetist to be fit for TURP surgical intervention. These patients were then electively admitted to the surgical units for surgical intervention of TURP.

The exclusion criteria for this study were patients who had undergone emergency TURP, as they were unable to follow the clinical pathway in its entirety (i.e., from ambulatory clinic to admission and then to discharge). Patients having multiple surgical procedures with several co-morbidities were also excluded. It was considered important by the researcher to restrict clinical pathway intervention to those patients requiring elective TURP surgery only.

It was assumed that the patients selected for TURP during the study year would be no different from patients requiring TURP in subsequent years. It was also assumed that there would be no change in procedural techniques, but that the medical and nursing staff may change during the study period based on turnover rates and replacements.

The above inclusion and exclusion criteria were based on the necessity for a relatively homogeneous group of patients for this study. The criteria were also necessary to ensure that patients in the control and experimental groups were identical with respect to type of treatment received.

Staff as subjects

The current investigation also collected data from the health team members who were involved in direct care of patients with TURP surgical intervention. These health team members included the nurses, physicians, dietitians, pharmacists, and physiotherapists who were involved in the care of patients in both study groups during the time period of August 1, 2000 to December 31, 2002.

ESTIMATING THE SAMPLE SIZE

The researcher utilized a power analysis procedure to estimate that a sample size of 200 patients would be sufficient to achieve the research objectives. Performing power analysis and sample size estimates is an important aspect of quasi-experimental design. “Power analysis is technique used to determine the risk of Type II error. This helps in modifying the study in order to decrease the risk” (Burns & Grove, 1999, p. 474).

Wood and Haber (1998) commented that the effort to ensure a sample is representative of the target population puts the researcher in a strong position to draw conclusions from the samples that are generalizable to the population. Statistical power is determined by three factors: (a) alpha, the criterion for significance. This was set at .05 for all statistical calculations in this study. The test is one-tailed, which means that only an effect in one direction will be interpreted; (b) effect size, to estimate the mean difference between the populations. A mean difference of one standard deviation for this study at 95% confidence level was set by the researcher to account for sampling error at .05 on a –2 to +2 scale. For example, an observed difference of –0.4 would be reported with a 95.0% confidence interval of 0.17 to infinity is of minus infinity 2.63. Since the confidence interval is defined as one-tailed, only one boundary is meaningful; and (c) sample size, calculated as 100 for each of the two groups. This would give statistical power of 88% to yield a statistically significant result, which is acceptable to most authorities (Heiman, 1992).

This computation assumes that the mean difference is –0.4 and the standard deviation is 1.0. This effect was selected as the smallest that would be important to detect, in the sense that any smaller effect would not be of clinical or substantive significance. It is also assumed that this effect size is reasonable, in the sense that an effect of this magnitude could be anticipated in this field of research.

The sample size for the other subjects, health team members (staff), was not computed, but all health team members who were involved in providing treatment and care were recruited in the sampling to measure the satisfaction among nurses, physicians and others who utilized the clinical pathways.

Strengths of sampling

The risk of bias, which is high with convenience sampling as the samples seem to be self-selecting, was minimized by recruiting all patients in the control and experimental groups during their allocated time period.

Weaknesses of sampling

A convenience sample was utilized because random assignment to the control and experimental groups was not possible as patients requested different bed allocations (private, semi-private and general ward) based on their affordability. Furthermore, due to non-availability of a separate research unit, random allocation would have created problems for nursing and medical staff to run both processes simultaneously.

As both groups of subjects did not participate in the research simultaneously, there is a time frame difference, which can lead to variance in outcome, thereby causing a threat to the internal validity of the study. For example seasonal barriers may affect patient satisfaction levels due to environmental variations, but it was not logistically possible to carry out both parts of the study simultaneously.

ETHICAL CONSIDERATIONS

Protecting the rights of subjects and adhering to ethical standards of conduct were achieved in this study by complying with the following ethical principles.

Written approval to conduct this study was sought and obtained from the Human Ethics and Research Committee of the University of Ballarat. It was also a prerequisite

requirement to gain approval prior to recruitment of subjects and collection of data. In addition approval was also obtained from the Ethical Review Committee of AKU. The subjects in the study were patients receiving medical services under the direct supervision of senior medical staff, therefore to ensure the successful completion of the project, it was also necessary to gain maximum cooperation from medical staff. Therefore written approval was obtained from the managers of surgical units and the urological team and primary physicians of subjects.

The study subjects of both groups, patients and staff, were provided with appropriate, and essential, information in the form of a plain language statement in English and Urdu, and written consent was obtained from them in their own language (English or Urdu) on the designated consent form (Appendix A). Norwood (2000, p. 68) stated that "Informed consent for procedures is a primary means of protecting subjects rights." Informed consent procedures address subjects' rights to self-determination, full disclosure and privacy. This means that informed consent is a contract between the researcher and subjects in terms of the responsibilities that both the researcher and subjects will assume as a result of participation.

An important principle for protecting subjects' privacy was ensuring the confidentiality of all data collected throughout the project. Confidentiality of all collected data was maintained strictly, both during and following the study. During the study the confidentiality of data was maintained by the following methods.

Patients' identity was kept separate from the data. The data was kept in a locked cabinet, and the key was kept in the locked office of the investigator. Anonymity of the subject was strictly maintained. A password-protected computer was used to store the information. After the completion of the study the data will be stored in a locked drawer in the office of the principal investigator for a period of five years. All questionnaires,

computer files and hard copies will be destroyed five years after the completion of the study. Only aggregated data will be used in the reports of the study.

The results of the study will be communicated to hospital administrators, faculty and other staff for policy guidelines, and the findings will also be communicated to patients.

SUMMARY

The above section has discussed that subjects were of two types: patients and staff. The target population for the current investigation was patients requiring TURP in Pakistan, and the accessible population was patients who were admitted to AKUH for TURP. The reason for selecting surgical patients as study subjects was that surgical patients use a lot of resources and care of such patients is often variable. The staff subjects were all caregivers involved in the delivery of care to patients with TURP surgical intervention. The section has also discussed that ethical approvals for the study were obtained from the Ethical Review Committee of AKUH as well as from the Human Ethics and Research Committee of the University of the Ballarat.

Section Three: Operational Definitions of Research Variables

This section will present operational definitions of the concepts and variables used throughout the research study. Sullivan and Axford (1999) stated that it is important to understand the process of measurement, which usually involves converting some theoretical ideas or concepts into a specific procedure. This process of converting theoretical ideas to tightly defined statements of how the variables are to be measured is known as operationalization, or providing an operational definition. The quality of any measurement depends on how well the operational definition used relates to the theoretical construct the researcher wishes to assess. There is the potential for imperfect measurement to occur if the operational definition used does not precisely reflect the

construct be to assessed. The operational definitions stated in this section are defined and placed in the same sequence as with the design of the data collection instruments.

INDEPENDENT VARIABLES

Clinical pathway

An integrated care pathway determined and agreed locally, and designed by a selective urology team of AKUH health workers, based on multidisciplinary practice guidelines and evidence where available, for a specific patient/client group such as TURP. This pathway will integrate nursing, medical and other clinical records, where clinical care will be documented concurrently. This will facilitate ongoing evaluation of outcomes for continuous quality improvement (Currie & Harvey, 1998).

DEPENDENT VARIABLES

Clinical quality

The operational definition of clinical quality in this study is that care provided is in accordance with set standards stated in policies, procedures and protocols at the excellent level. Set standards of care are based on current evidence in clinical settings. All aspects of care provided at AKUH have clinical policies, procedures and protocols derived from international standards. Nursing staff are instructed to follow these policies, procedures and protocols in order to meet the highest level of satisfaction of patients.

Variances

Variance is the difference between what has been planned and what actually happened. The term variance in the clinical pathway context is any deviation from the clinical pathway plan (Ahmad & Keng, 1998; Herring, 1999; Luc, 2000). Most of the time

medical and nursing staff cannot follow exactly the prescribed protocol because of changes in patients' condition during the course of their illness. The six types of variances monitored in this study were pre-admission variances, patient/family related variances, physician related variances, nursing related variances, hospital related variances and discharge related variances related variances.

Pre-admission variances

Variances occurring from confirmation of surgery to the time of admission were considered as pre-admission variances. Pre-admission variances include waiting time at admission office, waiting time at nursing station, utilization of pre-anesthesia clinic, and pre-operative teaching conducted in the clinic (Appendix B).

Patient/family related variances

These are variances caused by the patient or their family. Kitchiner, Davidson and Bundred (1996) stated that the patient might cause a variance from the clinical pathway, because of an unavoidable complication or a failure to comply with recommended treatment. Ahmad and Keng (1998) stated that examples of patient/family variances are when the patient refuses the operation, develops pain/fever, or when family is not ready to bring the patient home. Other patient/family related variances include hypertension, cardiac problems, diabetic mellitus, anemia, UTI, other surgery on the same day, general health, good health, satisfactory health, and poor health (Appendix B).

Physician related variances

Variances that occur due to physicians. Kitchiner et al. (1996) stated that medical staff may cause a delay in discharge if investigations and treatments are not completed on time. Ahmed and Keng (1998) added that physician related variances include the doctor omitting to prescribe, or prescribing an extra investigation. Physician related variances

include delayed consultation by physician, delayed evaluation, appropriate or complete written physician order, discussion of plan of care with the patient by physician, delayed investigation orders written by physician, delayed follow-up, and delayed education by physicians to patient (Appendix B).

These were delayed consultation by physician (physician delayed to see the patient for 4–6 hours when required); delayed evaluation (physician delayed to evaluate the patient for 4–6 hours); appropriate and complete written physician order; discussion of plan of care to the patients by physicians; delayed investigation orders written by physicians (delayed investigation orders for 4–6 hours); delayed follow-up; and delayed education by physicians to the patients (delayed in education for 4–6 hours by physician).

Nursing related variances

Variances occurring due to nursing related factors. These were complete documentation by nurses in every aspect of patient care during hospitalization of patient; discussion of plan of care with patients and families by nurses; appropriate assessment of patient; notification to physician by nurses about patient's condition when required; carrying out physician orders; and delayed patient education by nurses (patient education delayed for four – six hours).

Hospital related variances

Variances occurring due to hospital factors. Variation may occur due to hospital reasons, such as operations which are cancelled due to lack of staff or equipment (Kitchiner et al., 1996). Hospital related variances include equipment unavailability, delay in investigation results, problems in patient care with support services, cancellation rates and no show rates (Appendix B).

Discharge related variances

Variances that occur during the discharge process. Hospital discharge variances include discharge delay due to delayed delivery of medication, time of documentation of discharge notes, time of discharge orders written by physician, time of discharge procedure, time patient left hospital, discharge delay in hours by family (Appendix B).

Clinical indicators

An indicator is an objective measure of outcome or process of care in quantitative terms. Indicators are not exact standards; rather they are designed to be flags which, through the collection and analysis of data, can alert staff to possible problems and opportunities for improvement. The clinical indicators used in this study include post-operative problems such as electrolyte imbalance, constipation and phlebitis. Post-operative complications include monitoring of hematuria (Appendix B).

Financial variances

These are defined as variances related to financial performance. These include length of stay (LOS), overall cost, bed charges, attendant fee, surgical fees, anesthesia charges, special consultancy charges, pharmacy charges, medical/surgical supplies charges, diagnostic charges, and operating room charges (Appendix B).

Patient satisfaction

This is defined as the assessment of satisfaction of TURP patients with the care and services provided to them by AKUH.

Staff satisfaction

This is defined as the assessment of levels of staff satisfaction with patient care of TURP clinical pathway during the study period.

Clinical audit

A clinical audit is defined as the measurement of clinical practices and their comparison with the standards set by hospital management from the current evidence in the literature (Ahmad & Keng, 1998).

SUMMARY

The discussion in this section has presented and described operational definitions of all terms, concepts and variables used in the current investigation. This discussion will facilitate the correct measurement of data for different research variables and will clarify all terminologies used in the current investigation for the researcher/data collector as well as for the reader to understand the different concepts of research in a similar manner.

Section Four: Research Instruments

This section provides a detailed discussion on the process of development of research instruments, measuring validity and reliability of research instruments and activities of pilot phase. The section will also discuss the modifications that were made in the research plan based on the findings of the pilot phase.

TYPES OF INSTRUMENTS

The aim of the current investigation was to assess impact of clinical pathways on outcomes and variances, clinical quality, cost, patient and staff satisfaction. There were two types of instruments used in this study: one for measuring the processes and outcomes, and the other for measuring the satisfaction of patients and staff. In the absence of identifying suitable existing tools in the literature review, it was important to develop reliable and valid research instruments that could collect data on key research variables in the current investigation.

For measuring the processes and outcomes the variance tracking instrument for control/experimental groups was designed (Appendix C). This instrument consisted of measurement tools related to demographic, pre-admission, patient, nursing, physician, hospital and discharge variances, followed by tools for data collection related to clinical indicators and financial variances. The second type of data collection instrument was the clinical pathway of TURP (Appendix D). This instrument was the study intervention consisting of all aspects of delivery of patient care, from admission to discharge.

The second type of instrument related to measuring the satisfaction of patients and staff. They were the patient satisfaction survey questionnaire (control/experimental group) (Appendix E); the staff satisfaction survey questionnaire for control group (Appendix F); and the staff satisfaction survey questionnaire for experimental group (Appendix G). The discussion in the following section will give an overview of the development process of these instruments.

DEVELOPMENT OF INSTRUMENTS

As discussed earlier, two types of research instruments were utilized in this study. One was related to measurement of process and outcomes and the other related to measurement of satisfaction. This section will describe the development process for the research instruments.

Variance tracking instrument for control/experimental group

The inclusion of the variance tracking instruments for both study groups had the primary aim of generating quantitative data, to assess the impact of clinical pathway on clinical quality and cost of care. Another aim of this instrument was to generate continuous observation of ongoing core processes of patient care. As discussed earlier these instruments were not available in the literature review and Benson (2001) has confirmed that variance-tracking instruments were not available. Benson has further

stated that the development and implementation of successful and meaningful variance tracking tools sometimes proves difficult, and the creation of successful tools requires three ingredients: measurable outcomes or key elements; multidisciplinary input on tracked elements; and simple-to-use data collection methods. Keeping these points in mind, the variance-tracking instruments were designed to contain such characteristics and to cover three objectives of the current investigation, such as monitoring of variances and outcomes, monitoring of clinical indicators, and monitoring of financial variances. This instrument consisted of 57 items, out of which 35 items were to evaluate objective one, 11 items for monitoring of clinical indicators and 11 items for monitoring of financial variances.

Variance tracking instruments were designed to facilitate continuous observation and to record all the core processes from patient's admission to discharge. The researcher developed the first draft of this instrument based upon her own in-depth knowledge about the subject. This draft was then reviewed on three occasions by the multidisciplinary team members, which included physicians, nurses, physiotherapist and pharmacists. The final version had the input of other experts, such as physicians from the risk management group and other urology surgeons, who were not part of the multidisciplinary team. These revisions, made first after colloquies, and then with added changes by experts, were incorporated in the final version of the instrument. Finally, English was decided as the language of this instrument as it was for the sole use of the researcher.

Clinical pathway for TURP

The instrument of clinical pathway for TURP was developed following an extensive literature search at the international level, to explore the availability of this instrument. Although the clinical pathway format for TURP was not available, the clinical pathway

formats for other disease process were obtained from the literature and were utilized as a sample to assist in the design of an appropriate clinical pathway for TURP patients. Clinical pathways utilized by Johns Hopkins Hospital (Baltimore, USA), St. Vincent's Hospital (Melbourne, Australia), and existing AKUH clinical pathway formats were also reviewed in detail to design a suitable clinical pathway for TURP.

The clinical pathway for TURP was designed by the clinical pathway multidisciplinary team consisting of physicians, nurses, pharmacists, nutritionists and physiotherapists. Baird (1997) suggested that a team effort involving everyone in patient care should be involved in clinical pathway design. The researcher holds the view that a multidisciplinary approach is also the best way to overcome resistance to new change. The key activities of multidisciplinary team included an in-depth literature search to review the current management and recent treatment modalities related to TURP procedure; to incorporate all required components of care, such as activity, consultation, medication and diagnostic tests; and to obtain all relevant professional input in the design phase. The multidisciplinary team also determined at what point in the patient stay key interventions would occur, how the interventions would be sequenced, and what daily goals must be reached in order to achieve the expected clinical outcomes by the time of discharge.

The clinical pathway multidisciplinary team met weekly for three months and focused on completing one day of the pathway at each meeting. At the completion of the design of the clinical pathway, all team members again reviewed the whole clinical pathway to ensure all necessary components are included. This was followed by three to four small focus group discussions between multidisciplinary teams and urology surgeons, to review all the components critically, and to reach agreement for accepting the same regimen and treatment. All suggested modifications were incorporated into the

final draft of the research instrument. Focus group discussions played an important role in incorporating into the clinical pathway the best practices from current literature. As a result, the clinical pathway of TURP consisted of best practice to ensure excellent patient outcomes.

An integrated clinical pathway was the expected outcome of the multidisciplinary clinical pathway team, and all other types of documents from clinical practice were eliminated. Altogether, the multidisciplinary team eliminated 20 documents from current practice. The integrated clinical pathway of TURP consists of a detailed outline of all daily interventions rendered from pre-admission to discharge. The details addressed for each day in the clinical pathway are as follows: activity, diet, investigations, blood studies, medications, nursing monitoring and assessment, physician monitoring and assessment, pulmonary care, wound and other treatments, fluids or intravenous status, patient/family teaching, and discharge planning.

Final versions of the clinical pathway were produced after review of several drafts by the principal supervisor, the multidisciplinary team and an expert data analyzer. Patient-friendly versions of the clinical pathway were produced as patient/family education to help the patients and family know what to expect during their hospitalization, and to provide a consistent tool for teaching patients about the clinical pathway.

The clinical pathway was constructed in English; there was no need to translate it into Urdu as it has been designed for use by professional staff (nurses, physicians, dietitians, pharmacists), and English is the language of documentation for all professionals at AKUH.

Patient satisfaction survey questionnaires

To measure study objective four, patient satisfaction survey questionnaires were constructed to assess the subjects' satisfaction. A survey is a data collection method in which self-report data are collected from a population or sample in order to determine its specific characteristics (Nieswiadomy, 1998). Surveys characteristically pose a series of verbal and written questions about the research topic, which subjects are expected to answer (Rea & Parker, 1997). Surveys are one of the most extensively used research tools, and are suitable for use in both quantitative and qualitative research designs (Merriam & Simpson, 1995). Survey methods have been widely used within the social sciences to investigate a complex array of human phenomena (Brink & Wood, 1998). Foddy (1993) noted that asking questions is a widely accepted method of gathering information about behaviors, experiences, actions, motives, beliefs, values and attitudes. The essential aim of surveys is to accurately describe the population or variable under investigation (Polgar & Thomas, 1995). Surveys are often used in health care research to define or establish attitudes, opinions, and beliefs about health related maters, as well as to collect information about the demographic characteristics of populations (Polgar & Thomas, 1995). Surveys are also used when the necessary information in the study cannot be gathered easily by observation or other methods (Fowler, 1995).

Although surveys are a commonly used research tool, Foddy (1993) cautioned against the misleading view that designing and conducting surveys is easy. Rea and Parker (1997) concurred with this view, and suggested that constructing effective surveys can be a difficult and time consuming task involving the creation of clear, unambiguous questions that elicit useful data. Foddy (1993) pointed out several potentially problematic aspects of surveys, including the respondent's failure to comprehend the question, the respondent's unwillingness to participate (i.e., lack of

interest or effort), lack of honesty on the part of the respondent (i.e., unwillingness to admit certain attitudes or behaviors), and researcher failure (i.e., incorrect procedure, inappropriate questions, erroneous recording procedure). There is much evidence to suggest that careful construction of survey questions and appropriate pilot testing can help the researcher avoid the common pitfalls of survey method (Foddy, 1993; Fowler, 1995; Merriam & Simpson, 1995; Polgar & Thomas, 1995).

Surveys characteristically use a questionnaire in which the same questions are asked of all study subjects (Merriam & Simpson, 1995). In a written questionnaire, data collection is controlled by the respondents, who complete the questionnaire in their own time, and in a variety of environments and situations (Fowler, 1995). Unlike the verbal questionnaire or interview where the researcher essentially controls the pace and flow of data collection, and is also available to clarify questions, the effectiveness of the written survey entirely depends on the subject's ability to clearly understand both the meaning and intention of the survey questions (Rea & Parker, 1997). In the current investigation the survey questionnaires were used in both ways. Some subjects completed survey questionnaires by themselves, and if the subjects were unable to do so due to their sickness, the researcher assisted the study subjects in completing the survey questionnaires.

All the items in the patient satisfaction survey questionnaire were stated clearly to ensure that the language is simple, clear and understandable for subjects. Beanland, Schneider, Wood, and Haber (1999) stated that the basic standard for evaluating individual items in an interview or questionnaire is that the item must be written so that the intent of the question and the nature of the information sought are clear to the respondent. Each item must ask only one question, be grammatically correct, free of jargon and value-laden terms, not be open to alternative interpretations, and written in

language understandable to the respondents. One way to determine whether questions are understandable to the target respondents is to pilot test them with a similar population. Statistical procedures such as factor analysis can also be used to demonstrate the reliability and validity of such instruments.

The patient satisfaction survey questionnaire included input from previously hospitalized patients and was developed on the findings of the need survey conducted from AKUH's customers in 1996 and 1999. As discussed previously, quality and customer (patient and staff) satisfaction have become the key competitive weapons of this era. Therefore AKUH practices the philosophy of Continuous Quality Improvement (CQI) and applies the Malcolm Baldrige quality program as a model for quality improvement. The first criterion for this prestigious Malcolm Baldrige award on quality is that the quality is defined by customers. Several authors (Bond & Thomas, 1992; Lynn & Moore, 1997) have pointed out that the majority of patient satisfaction measures reflect issues important to providers and do not include the patient's perspective. Instruments that include both nurse and patient perspective of good nursing care quality are more likely to yield meaningful results that can be used as a basis for quality improvement initiatives.

As the measurement of patient satisfaction survey was a regular feature of the marketing department of AKUH, it was relatively straightforward for the researcher to construct a patient satisfaction survey questionnaire. There were also valid and reliable instruments available in the database that asked objective questions of patients concerning aspects of care that clinicians and patients believe represent quality. A multitude of instruments exists that have been developed and validated (Leino-Kilpi, Walta, & Helenius, 1994; Rubin, 1990; Rubbin, Ware, Nelson, & Meteroko, 1990a; Wilde, Starrin, Larsson, & Larsson, 1993; Wilde, Larsson, Larsson, & Starrin, 1994).

The patient satisfaction survey for the current investigation consisted of appropriate and relevant questions that can measure specific experiences reflecting on the quality of care. Cleary (2001) stated that despite numerous studies regarding patient satisfaction, they have not resulted in quality improvement. She further observed that previous satisfaction surveys had little impact on quality improvement because they often did not meet minimal standards of conceptual or methodological rigor, and were not designed to facilitate quality improvement efforts. It is now widely recognized that there is a need for various methods, other than clinical conversations, to elicit patients' views on such matters as treatment decisions and the quality of care received. Much effort has, therefore, been devoted to developing and evaluating survey measures that elicit reports about specific care experiences that reflect quality of care, not amenities.

Rea and Parker (1997) stressed that questioning during the development stage of survey design is crucial; once the survey is in use, correcting fundamental flaws in question design is both costly and difficult. Fowler (1995) confirmed the same idea by stating that clarifying questions during the survey design phase is the most effective way of attaining quality survey data for improving the quality, that is, the relevance and importance. Therefore, the questions that are highly relevant to the topic of the impact of clinical pathways and the addressing of core issues presumably stand a greater chance of eliciting a response from subjects. Carefully constructed survey questions also reduce respondent burden and may result in more efficient use of resources (Fowler, 1995).

The patient satisfaction survey instrument was first constructed in the English language, then translated into Urdu, and then back-translated into English by translators who were not part of the study. This exercise was necessary to ensure the face and content validity, and also to ensure that it was a user-friendly instrument.

A Likert scale was used to measure satisfaction, considering strongly agree = 5, agree = 4, unsure = 3, disagree = 2, strongly disagree = 1. Like Thurstone or Guttman scaling, Likert scaling is a uni-dimensional scaling method. A Likert scale is an example of a fixed-response format. Likert scales are lists of statements on which respondents indicate, for example, whether they 'strongly agree,' 'agree,' 'disagree,' or 'strongly disagree'. The four-point scale illustrated is an example of forced-response item (Beanland, Schneider, Wood, & Haber, 1999). Sullivan and Axford (1999) stated that this approach is named after a Frenchman, Renis Likert, who developed this format. It is an approach that is widely used when measuring attitudes, and involves providing respondents with a statement that reflects a particular attitude or opinion. This approach can measure the direction, intensity and, if a number of items of differing degrees of extremity are used, the extremity of attitudes.

When developing a Likert scale, the first step is to define what is going to be measured. In this uni-dimensional scaling method it is assumed that the concepts measured are one-dimensional in nature. The second step is to create a set of potential scale items. These should be items that can be rated on a 1–5 or 1–7 disagree/agree response scale. The next step is to have a group of judges rate the items; for example, 1 = strongly unfavorable to the concept, 2 = somewhat unfavorable to the concept, 3 = undecided, 4 = somewhat favorable to the concept, and 5 = strongly favorable to the concept. The next step is to compute the interrelations between all the items, based on the ratings of the judges.

Format of patient satisfaction survey

The patient satisfaction survey questionnaire consisted of eighteen items. The first fifteen items were related to satisfaction with the admission process, information provided on delays, length of stay, ongoing update on treatment and care, ongoing

update on medical condition, coordination of care among health team members, knowledge level and competency of nursing staff, plan of care explained by nursing staff, explanations by physician on care aspects, patient's preparation regarding discharge, nurses' role in the discharge process and patient satisfaction with overall quality. Questions sixteen to eighteen were open-ended, to explore information regarding complications developed during hospitalization and obtain comments and suggestions from patients to improve the hospital systems.

Question one of the patient satisfaction survey related to the admission process. It was important for the researcher to obtain the patient's input on this area. The physical layout of AKUH is spread over 84 acres, the admission office is located on the ground floor and the in-patient units are on the first floor. Due to the absence of an appropriate signage system, security guards are posted at various locations to guide patients to reach the appropriate clinical areas. These security guards will only respond if asked; therefore, it was important for the researcher to assess the patients' perception of the smoothness of the admission procedure. It was anticipated that this question would elicit information about any difficulties faced by patients during the admission process.

Question two related to keeping the patient informed while waiting for admission. As discussed earlier, AKUH has three types of bed categories (general, semi–private and private). Patients and their families have to decide at the time of admission which bed category they can afford. Sometimes delays occur due to non-availability of the bed category requested by the patient. Therefore, it was necessary to explore that, in such instances, patients are updated and kept fully informed, in order to avoid any unnecessary anxiety among subjects related to prolonged waiting.

Patients and families are quite anxious about the recovery from current illness. It is the prime responsibility of the health care team members to keep patients and their families informed of the progress of the patient's condition. Question three required the subjects to reflect on their experiences and provide information regarding the health team members' role in communication with them and their families. It was assumed that subjects would discuss their experience in this regard.

Question four focused on keeping patients informed regarding their length of stay in hospital. It is expected that health team members, particularly physicians, will keep patients well-informed regarding their length of stay. This information mentally prepares patients and their families regarding their duration of stay in the hospital, and allows them to make alternative arrangements for home and job management. This information also helps to decrease patients' anxiety and enhance their coping mechanisms with their current illness. It was anticipated that this question would provide information on this very important issue of communication.

Question five measured the extent to which the medical condition of the patient was communicated to patients and their families from admission until discharge. The rationale of adding this question was to obtain feedback from patients regarding the extent to which health team members kept patients and families informed regarding the progress of care during hospitalization.

It is the prime right of patients to be informed on the administration and common side effects of their medication. The rationale for adding question six was to solicit feedback from subjects on this important aspect of care, and it was anticipated that this question would discover patient satisfaction on awareness regarding medication administration.

Question seven asked about coordination in care between doctors, nurses and other hospital staff. As discussed earlier, the patient satisfaction surveys of 1996 and onwards have outlined this as a major area for improvement. Patients are the best observers when judging how much coordination exists among health team members. This question promotes critical reflection on practice, by prompting subjects to think about how coordination among health team members affects their experience of hospitalization.

Question eight directly related to nursing care. As nurses are the direct care providers, it was necessary to explore patients' perceptions of nursing knowledge. This question was included to stimulate the subjects' perception of nursing performance. Patients are considered to be the best judges to assess and comment on nursing knowledge, as they pose many questions to nursing staff on different aspects of care during their hospitalization. Knowledgeable nurses respond to all patient queries with great efficiency and without any delays.

Questions nine and ten related to the plan of care, which was explained by nursing staff, and explanations on all aspects of care provided by nurses. Plan of care means explanation of day-to-day progress to the patients. In the case of TURP, it would be information regarding the time of the patient's transfer to the operating room, the time of his return to the nursing unit, the total duration of continuous bladder irrigation, and so on. This question was anticipated to gather information from subjects regarding this very important component of patient care. Questions eleven and twelve explored how satisfied the patients were regarding the explanation of care provided by physicians Question thirteen related to the preparation of the patients for discharge. An important aspect of patient care is for patients to feel well-prepared about going home.

Nursing staff play a major role at the time of discharge, ensuring that all required items such as discharge summaries, take home medication, and follow-up appointments have been provided to patients without delay and question fourteen was designed to explore the information regarding above discharge arrangements.

Question fifteen related to patients' satisfaction with the overall quality of care delivered to them during hospitalization. This question was intended to collect the opinions of subjects on overall satisfaction. Several customer-oriented agencies include this question in their patient satisfaction surveys, as they believe that overall satisfaction with services plays a major role in customer retention. The question was direct, unbiased and unambiguous, yet the political orientation of the question was clear. Patients, as consumers, have a valuable role in assessing levels of overall satisfaction, and their views and opinions may contribute to the wider critique that must inevitably occur in the process of quality improvement. Question sixteen related to the development of any complication during hospitalization, and the nature of the complication.

Question seventeen and eighteen were open-ended questions, and the rationale for including these was to seek the patient's opinion and views of the hospital's services. It was anticipated that the information and findings from this question would assist AKUH to improve its core processes. The majority of subjects chose to contribute comments to improve the hospital system.

Sample

All patients who went through the surgical intervention of TURP and met the inclusion criteria were surveyed to measure their satisfaction. All 200 patients agreed to participate in this study. They were all briefed on the purpose of the survey by the researcher to gain their cooperation. The researcher also briefed the study subjects

regarding confidentiality of the data collected in order to achieve maximum participation.

Interview setting and procedure

The original intention of the survey was that each subject would be given a questionnaire in an envelope, and provided with sufficient time to complete the questionnaire. Subjects would hand over the completed questionnaire at reception before discharge. However, due to the patients' medical condition and level of comfort, the data collector faced a lot of obstacles with this procedure, and some of the subjects requested the data collector to complete the questionnaires for them. Therefore, the data collector/researcher assisted 30% of subjects with questionnaire completion, while 70% of subjects completed the survey questionnaire themselves.

Completing survey questionnaires with patients at their bedside before discharge was a good opportunity for the researcher to understand their feelings, views and inputs regarding delivery of care and hospital systems. This experience of interacting with hospitalized patients was a resoundingly positive one as they were articulate and knowledgeable. Several of the interview subjects made comments and suggestions about hospital systems as well as appreciating the interview process; they found the approach of inviting comments from consumers was a good opportunity for comments from the real customers of the health care system.

This dialogue was also an opportunity to talk about contemporary issues with patients, in order to explore their views. As a critical researcher, it was very rewarding to observe the patients engaging in a process of critical thinking on hospital care and systems, in the process of responding to the interview questions. Without exception, the subjects responded to the survey questions with reasoned consideration, and this was reflected in the critical insights that they contributed to the investigation.

The patient satisfaction surveys were conducted on the day of discharge, one to two hours prior to discharge. The timing of a patient satisfaction survey is very important, as several patients may find it uncomfortable to give any negative comments while they are still in hospital. In earlier research, the time of inquiry has varied from the day of discharge (Peiponen, Brommels, & Kupiainen, 1996), to one week (Metenko, Nelson, & Rubin, 1990), or months after discharge. One thing that may affect highly positive results is if patients answer the questionnaire during the early part of their hospitalization. The answers given at such a time may be affected by a cultural tendency to express gratitude to and satisfaction with the health care organization, or by reluctance to express negative feelings for fear of consequences (Salmela, 1996).

Staff Satisfaction Survey Questionnaires

To measure study objective five, staff satisfaction survey questionnaires were constructed to assess the satisfaction of subjects in both study groups. Design of the staff satisfaction survey questionnaire was not an easy job as related instruments which can measure staff satisfaction with clinical pathways were neither available in the database, nor did such samples exist at AKUH.

The staff satisfaction survey questionnaires were of two types, one for the control group, and one for the experimental group. The staff satisfaction survey questionnaire for the experimental group had 18 questions, in comparison with the staff satisfaction survey questionnaire for the control group, which had 10 questions. The eight additional questions in the experimental group questionnaire were related to exploring input from patients regarding the clinical pathway intervention, and this was not required in the control group.

The Likert scale was used to measure satisfaction, and considered strongly agree = 5, agree = 4, unsure = 3, disagree = 2, strongly disagree = 1. The staff satisfaction

surveys were written in English; there was no need to translate them into Urdu because the common language used for clinical documentation in the hospital was English and all health team members were sufficiently familiar with this language.

Format of staff satisfaction survey

The staff satisfaction survey questionnaires were structured to explore demographics, years of experience of staff, staff satisfaction regarding communication among health team members, co-ordination of care, patient education, and benefits of the clinical pathway. This was followed by four open-ended questions. Responses from staff were required on the benefits of the clinical pathway, their reactions toward clinical pathway, any weaknesses in this new model/system, any strengths of this new model/system, and any additional comments on the implementation of the clinical pathway. Finally, one questions related to staff comments and suggestions.

Question one related to the designation of staff, and question two related to years of experience. Question three related to whether care of TURP patients was delivered in a consistent and well-organized manner. This is an example of a descriptive and non-threatening type of question, which introduces the topic and also seeks relevant data about the process of coordination in care. Question four sought specific information regarding communication between staff members of the surgical discipline, whereas question five concerned communication between health team members of other disciplines. The questions required subjects to reflect on this important aspect of patient care. It was anticipated that responses to these questions would provide information on the effectiveness of communication among the multidisciplinary team.

Question five related to provision of consistent information by staff to patients. This question required respondents to critically evaluate their own practice of communication with patients, and to comment on this area. It was anticipated that this

question would stimulate critical thinking in the subjects. Question six related to patient education regarding their care, treatment, and medical condition. It was anticipated that this question would stimulate staff to think about how able they were in conducting patient education. Question seven related to the organization of the patient's discharge planning. It was important to seek out staff views and satisfaction on discharge planning, considering it is a very important component of patient care. This was again self-evaluation by staff on their current practice.

Staff satisfaction regarding question eight and nine related to the awareness of patients and their family members regarding their expected length of stay in hospital, and the amount and frequency of advice provided to them about the patient's treatment and condition. These two questions required respondents to comment on their satisfaction with family involvement. In Pakistani culture, family members are highly involved in the care of their sick relative, and around four to six relatives stay with the patient all times. It is always a challenge for staff to decide to whom information should be communicated, as everyone around the patient possesses a close relationship. For example, if a married male is admitted, his wife is not the next of kin, but perhaps six brothers, who are also responsible for payment of the cost of hospitalization, are considered close relatives, and four to six children are also considered close. Staff are taught to ask the patient's family to nominate two to three close relatives at the time of admission, and to update the patient's progress to these relatives.

Question ten was in regard to awareness of staff about the TURP pathway. This was included only in the experimental group, as this was the group involved with the clinical pathway. Question ten, "Are you aware of the pathway for the care of TURP patient?" was a closed-ended question to discover staff awareness regarding clinical pathway. Question eleven, "Have you had education regarding the implementation of

clinical pathway?" was also a closed-ended question that sought information on the participant's understanding and knowledge of the clinical pathway. It was anticipated that respondents would confirm that they received education and knowledge regarding clinical pathway before the implementation phase.

Question twelve was intended to seek the opinion of subjects on the time-saving benefits of clinical pathway, and was only included in the experimental group. It was intended to stimulate critical thinking among the staff, so that they could determine how much time was saved from what activities. Herring (1999) stated that clinical pathways provide opportunities for the more efficient use of nursing time and resources. He also stated that clinical pathways save resources and time, but this concept was never tested scientifically.

Question thirteen assessed staff satisfaction with the content of the clinical pathway. This question required subjects to reflect on the content of the clinical pathway, and provide their satisfaction score. It was important to establish whether the content of the clinical pathway covered all the key components of patient care. The rationale for including this question was to explore from subjects whether they had experienced any problems in patient care due to missing contents of clinical pathway.

Question fourteen related to interaction and collaboration between physicians, nurses and other professionals during pathway utilization. It was important to seek the opinion of staff in this area, as it has been widely discussed in the literature that clinical pathways increase multidisciplinary collaboration.

Question fifteen related to coordination in patient care. Coordination is an important aspect of care, where all health team members communicate patient care matters with each other, so as to provide comprehensive care. It was important to

include this question in the staff satisfaction survey in order to obtain staff views and their perception on coordination.

Question sixteen related to benefits of clinical pathway. This question was designed to explore from the subjects of experimental group their personal views regarding benefits of clinical pathway. Given that there have been no previous evaluative studies, seeking opinion from staff on the benefits of clinical pathways was important. It seems logical to commence a discussion on this area to evaluate the service. It was anticipated that the subjects would engage in a process of critique of the clinical pathway intervention, which would produce information useful for refining and further development of current intervention.

Question seventeen calls for subjects to discuss their positive and negative reaction to implementation of clinical pathway intervention. It was anticipated that this questions would generate a broad critique of clinical pathway intervention and will also provide unique insight into the subjective experience of staff for use of the clinical pathway.

Question eighteen, the final question of the staff satisfaction survey was offered to the subjects of both groups as it invites subjects to make any additional comments related to any aspect of patient care. This item was included to make provision for subjects to contribute information that they feel to be important to the present investigation. This question was also intended to elicit information not covered in other questions.

Sample

The sample for the staff satisfaction survey was made up of medical, nursing, paramedical, and support services staff (dietitian, pharmacist, and physiotherapist) who participated in care of TURP patients. A total of 65 subjects agreed to participate in the

staff satisfaction survey. They were briefed by the researcher regarding the purpose of the survey and the importance of confidentiality of data. By briefing subjects, the researcher hoped to achieve maximum cooperation and participation.

Interview Setting and Procedure

The subjects of the study were given staff satisfaction survey questionnaires to complete in their own time and return to the researcher. It was necessary to remind subjects to complete and return the survey forms, so the strategy of inviting subjects in small groups was implemented. On some occasions, small groups of 5–6 subjects were invited to complete the questionnaires. This strategy was not only saved time, but it also achieved a response rate of 100%.

VALIDITY AND RELIABILITY OF MEASUREMENT INSTRUMENTS

This section will discuss the methodology used to measure reliability and validity of research instruments. Validity and reliability are two crucial aspects in the critical appraisal of measuring variables and concepts (Wood & Haber, 1998). Validity addresses the issues of whether what was to be measured was actually measured. When an instrument is valid it truly reflects the concept it is supposed to measure. As mentioned above, the research instruments were of two types: first, process and outcome related instruments (variance tracking and clinical pathway of TURP); and second, satisfaction related instruments (patient and staff satisfaction survey questionnaires). The discussion in the following section will outline the steps involved in measuring reliability and validity of research instruments.

Measuring validity and reliability of outcome related instruments

In the current investigation, construct validity was used for the instruments of process and outcome measurement, which were the variance-tracking instrument and clinical

pathway. Robert and Taylor (2002) stated that construct validity relies on theoretical context. It attempts to validate the body of theory underlying the measurement and testing of the hypothesized relationship. For example, the clinical pathway of TURP and variance tracking forms measure the same relationship at the empirical level. Therefore, the construct validity was used for these instruments as conceptual and theoretical background was examined in detail against the research.

Content validity ensures that the designed instruments contain all required aspects to adequately measure the study variables. The variance tracking instrument had content validity as it contained all important aspects of patient care and included all types of variances which the multidisciplinary team felt were important to be measured. This instrument consisted of 57 items, out of which 35 items were related to variances in patient care, 11 items for monitoring of clinical indicators, and 11 items for monitoring of financial variances. One example of variance monitoring is that nursing related variances were: namely, complete documentation of every aspect of patient care, discussion of plan of care to patients and families by nurses, appropriate assessment of patient, notification to physician by nurses about patient's condition when required, carrying out physician orders, and delay in patient education by nurses. The content validity of variance monitoring instrument was also achieved by seeking an expert opinion from nurses and clinicians on the content of the instruments through focus group discussions.

Reliability of research instruments means that results on repeated measures are consistent. Reliability is concerned with consistency, accuracy, precision, stability equivalence and homogeneity (Beanland, Schneider, Wood, & Haber, 1999). The instruments were modified on several occasions to make them understandable, and the pilot phase of the study conquered the ambiguities in the variance monitoring

instrument. This showed that reliable instruments were constructed as they showed stability by producing the same results with repeated testing, and they also showed homogeneity as they measured the same concepts and characteristics.

Measuring validity and reliability of satisfaction related instruments

To decide whether the patient and staff satisfaction survey questionnaires were valid was a complex issue. It involved the examination of the questionnaires from different perspectives. A satisfaction survey questionnaire is considered valid if its scores are related to expected behaviors. For example, patients who are satisfied with their care are likely to recommend the hospital to their families and friends. Information collected through these instruments did not indicate any unexpected behavior or any findings which would be contrary to the perceptions on patient satisfaction, and therefore questionnaires were considered to have face validity. Secondly, newer surveys and reports can provide results that are interpretable and suggest specific areas for quality improvement efforts. Face and content validity was used for satisfaction surveys as formal validation of measuring instruments.

Face validity is concerned with the extent to which a measurement instrument appears to be valid; for example, a respondent should be able to relate the content of the questionnaire to the purpose it is supposed to fulfill. Straightforward questions followed by a choice of responses assist face validity (Sim & Wright, 2000). The patient and staff survey questionnaires possessed face validity as these instruments contained straightforward questions on issues related to patient and staff satisfaction. A questionnaire containing the questions such as “your consultant visited you on a daily basis,” “your consultant was caring,” “overall, the care you received in the clinic was to your satisfaction,” “you were satisfied with number of visits by your consultant,” is a Likert type scale with each item followed by a choice of responses in terms of:

Maximum Satisfaction → Always Sometimes Usually Never ← Maximum dissatisfaction. Both survey questionnaires had face validity as they achieved the purpose for which they were designed, which was evident from the results of pilot phase.

Content validity is defined as the degree to which instrument items represent the universe of the concept under study. Checks for content validity required confirming whether the scale provided adequate coverage to all the aspects included in the study (Sullivan & Axford, 1999). Both survey questionnaires had content validity as they contained all-important components of patient and staff satisfaction. Review of patient and staff satisfaction questionnaires revealed that both the instruments covered all-important components of patient satisfaction, such as medical care, information and caring, promptness of service, courtesy of service providers, and comfort amenities provided. These components of patient and staff satisfaction were identified by the needs survey conducted before the development of the questionnaires. The questionnaires also contained open-ended questions such as "please tell us what the hospital could do to improve the quality of services and care you received," which may identify other issues to be included in the questionnaires.

FORMULATING THE DATA CATEGORIES

The contents of the data instruments were developed and refined through combining knowledge gained from the literature review and expert opinion. Rea and Parker (1997) suggested that the organization of data collection requires, firstly, the use of broad categories, which are subsequently refined and modified into sub-categories and specific questions. The broad categories, or domains of data, were initially identified by the researcher, and later discussed and refined with the focus group. The broad categories of data identified by the researcher through the literature review included

demographic data, clinical data, variance monitoring, monitoring of complications and clinical indicators, monitoring of financial variances, and measurement of staff and patient satisfaction.

The demographic information (patients and staff) was required for baseline data of study subjects such as age, gender, qualifications, years of experience, and category of staff, from the staff subjects; and age, employment, health status, gender, and employment status, from the patient subjects.

The inclusion of clinical information as a data category in the study sought knowledge related specifically to clinical practice by health team members. The inclusion of information regarding five types of variances, such as patient, nursing, physician, hospital and discharge related variances, had the primary aim of exploring the gaps in the system of delivery of patient care.

The information related to clinical indicators was important to be included in order to explore the impact of the clinical pathway on clinical quality. The information related to financial variances was included to assess the overall cost of the patient's hospitalization, and also to measure whether the clinical pathway intervention had an impact only in reducing the cost of care in the experimental group. Similarly, the patient satisfaction survey and staff satisfaction survey questionnaires were designed specifically to assess communication and interactions of health team members with patients. All data sets were focused and administered to both study groups to assess the impact of clinical pathway on the study variables.

PILOT PHASE

Pilot testing, or the preliminary testing of a questionnaire on a sample of the population being investigated, is commonly used in survey research to identify potential problems with questions and survey design (Polgar & Thomas, 1995). Testing the validity and

reliability of the instrument prior to use is an important step in survey development, and it is especially important when testing or evaluating a new instrument (Nieswadomy, 1998). A pilot study is often defined as a smaller version of a proposed study that is conducted to refine the methodology. It is often developed similarly to the proposed study, using similar subjects, the same setting, and the same data collection and analysis techniques. However, Prescott and Soeken (1989) believe pilot studies are conducted for a variety of reasons, such as to determine whether the proposed study is feasible (e.g., Are the subjects available? Does the researcher have the time and money to do the study?); to develop or refine a research treatment; to develop a protocol for the implementation of a treatment; to identify problems with the design; to determine whether the sample is representative of the population or whether the sampling technique is effective; to examine the reliability and validity of the research instruments; to develop or refine data collection instruments; to refine the data collection and analysis plan; to give the researcher experience with the subjects, setting, methodology, and methods of measurement; to try out data analysis techniques (Burns & Grove, 1995).

On completion of the construction of instruments, a pilot study was conducted, in July 2001, in other surgical units on different subjects from those of the actual study. The purpose of this pilot study was to evaluate and determine the appropriateness of instruments. A total of ten subjects (five from control and five from experimental) were recruited to conduct the pilot study. All five study objectives were assessed on all study subjects. The staff satisfaction survey was conducted from five staff members who provided care to the TURP patients in the pilot study. The researcher approached the hospital ethics committee to request permission to conduct the pilot study. Following approval by the hospital ethics committee, permission was also obtained from nursing

managers of ambulatory and inpatient units as well as the urology team. The project was also introduced at a team meeting, in order to keep the team involved and informed regarding pilot study activity.

Conducting the pilot study was a challenge for the researcher, as it was required to conduct the pilot on both study groups (control and experimental). The control phase of the pilot study was smooth, where patients and staff were kept double blind, but on the experimental phase of the pilot, it was necessary to introduce the intervention of clinical pathway. Staff involved, therefore, required training and education regarding the clinical pathway. The aim of the pilot study was to test: a) average time taken to complete the data instrument; b) quality of the layout and presentation of the data instruments; c) any difficulties faced during completing the data instruments; d) the content validity of the data instrument; and, e) whether the wording of the questionnaires was appropriate. The measure of validity and reliability of the questions was determined by the researcher to be a more than ninety percent acceptance rate for each question.

RESULTS OF THE PILOT PHASE

The researcher identified that the instruments of the current study were explicit in design and required continuous observation and full time commitment by the researcher. It was necessary to recruit the subjects of the study (patients) from the ambulatory clinic and observe pre-admission variances on those patients. This was followed by continuous observation of patients with TURP surgical intervention during their hospitalization. This was like a participant observation, where the researcher observed all aspects of delivery of patient care by health team members and recorded them on data instrument sheets. Furthermore, at the same time, a few more patients were required to be observed by the researcher in the clinics, and three to four patients

in two surgical units, which were at some distance from each other. The researcher was also required to measure the financial variances, patient satisfaction survey, and staff satisfaction survey during the same period. The main conclusions drawn from the pilot phase of the study were that there needed to be a full-time commitment by the researcher and all observations must be kept track of. The following section outlines the discussion on these areas.

To conduct full observations and gain maximum knowledge of all aspects of care, and to observe the gaps in the delivery of patient care, a full-time commitment was required by the researcher during the data collection phase. The researcher found that the pilot study was quite extensive in nature, and the previously decided upon 2–3 hours time to be taken from her work schedule would clearly not be sufficient. This problem was discussed with the faculty of the University of Ballarat, and permission was obtained to recruit a full-time data collector to collect the data for all the variables in the current investigation. The data collector was fully trained to do this job with great accuracy.

During the pilot phase, the researcher felt that her position and status would prevent occurrences of natural instances in patient care, and would create a Hawthorn effect on the data. As the researcher was the Director of Nursing Services, and well-known to the hospital nursing staff and physicians, staff were quite conscientious in delivering patient care during her presence. The neutral, unbiased, and unknown data collector was required to overcome the potential for bias in the data sets.

During the pilot phase, there was an identified need to formulate some strategies for keeping track of the 24-hour observations of patients by the data collector and researcher. For this purpose, the data collector and the researcher prepared a schedule, where maximum activities could be observed and documented. The data collector was

also given a pager to be contacted by ambulatory staff when a patient entered ambulatory care. Schedule, pager, and telephone contacts allowed the data collector to keep herself in the full loop of information regarding patient care activities.

The evening and night observations were to be tracked through medical record review of the patient's files the following day, by reading nursing and physicians' notes. Furthermore, this documented information was verified by observation, assessment of patients, and asking questions of patients regarding various aspects of care delivered in the absence of the data collector and researcher. For example, the activities of the patient's care, diet, medication, activity level, intake and output, catheter care, and other aspects of care that occurred during the evening and night were recorded on data instruments from medical record review and verified by patient interviews.

The researcher also sought subjects' views of any problems they faced during the completion of the questionnaire, and obtained comments on whether the content and wording of any question required changing. Conducting a pilot study on 10 patients before implementation of the full study allowed the researcher to review the sequence of questions and remove ambiguities. This enhanced the validity and reliability of the instruments, and enabled the researcher to review queries such as language barrier. The results of the pilot phase indicated some modifications in the content of the instruments but, in large, sorted out the whole process of the study. This process enabled the researcher to develop and practice her skills in data collection and storage in a systematic manner.

SUMMARY

The above section has discussed how the research instruments were developed after an extensive literature search failed to reveal appropriate instruments. As valid instruments were not available, the researcher used other strategies and means to ensure the

reliability and validity of newly developed tools for the current investigation. Furthermore, the section has also discussed that research instruments were piloted and refined according to the feedback received during the pilot phase.

Section Five: Implementation Phase

This section will discuss the implementation process of the current investigation and provide an overview of processes utilized during this phase, including preparation of nursing and medical staff, recruitment of subjects, preparation of the researcher, and recruitment and preparation of the data collector. According to Schwoebel (1999), the implementation phase is crucial. He suggested that the following criteria should be observed to achieve the optimum results during this phase:

> "Do not expect someone else to do the work for you; do not make the critical pathway just a nursing/physician tool, include all disciplines in the development of use; make sure clinical pathways are being used as working tools to deliver care. The documentation tools must incorporate the clinical pathway to prevent double/triple charting exercises; do not add clinical pathways without eliminating other things; communicate concrete results" (p. 65).

Considering that the implementation phase is a very important part in the current investigation, the researcher ensured that all steps identified in the literature review were followed, in order to integrate this new concept of clinical pathways in a successful manner.

PREPARATION OF STAFF

There was no preparation required during the control phase of the study as data was collected from patients and staff without any intervention. However, in order to implement the study intervention in the experimental phase it was necessary to promote cooperation and improve knowledge and awareness of medical and nursing staff. In the experimental phase of the study, staff were made aware of the importance of utilizing

the clinical pathway of TURP in clinical practice, and were also prepared regarding the process of completing the clinical pathway formats. The educational training sessions regarding the clinical pathway had an impact on all disciplines; therefore, all medical, nursing, and other team members (approximately 150 staff) were trained by the researcher regarding the utilization of the clinical pathway by conducting ten educational sessions with them. Zevola (1997) supported the idea of staff education and stated that a pathway inevitably requires change in clinical practice; therefore, health care providers must be taught how to use the pathway before it is actually implemented. The month of February 2002 was utilized for training sessions to ensure that all staff working in the urology clinic, surgical B1 unit, surgical PWI unit, physiotherapist and pharmacist were trained to utilize and complete the pathway formats as required by the researcher.

Education sessions

It was very important for the researcher to develop a good teaching module for all staff responsible for completing clinical pathways during the intervention phase of the study. The teaching module included knowledge regarding clinical pathways, such as definitions of pathways, their historical development (nationally and internationally), and the benefits of clinical pathways for patients and staff. Furthermore, the teaching module also included an introduction to the clinical pathway of TURP, and a detailed explanation regarding how to complete the format of this clinical pathway.

During the educational sessions, staff were notified that the clinical pathway would remain in the patient's red folder, along with other forms, to ensure that all health team members had access to it, and that all health team members should document patient care using this multidisciplinary approach. The purpose of this effort was to replace the current practice of physicians having their own red folders, containing

physician related forms, and nursing staff having their own folders, containing nursing forms. Furthermore, in traditional practice, both these documentation folders were kept apart so as to be easily accessible to each member as per their convenience, which prevented review of each other's comments on patient care, resulting in delays.

All medical and nursing staff were also trained to ensure that planned interventions on clinical pathway of TURP were appropriately applied for each individual patient. As this clinical pathway was part of the medical record, therefore a legal document replacing all current documentation formats, each multidisciplinary team member was instructed to complete all columns of clinical pathway, and enter their full name and designation in legible handwriting. Medical and nursing staff were informed that this integrated documentation, in the form of the clinical pathway, would replace all other type of documentation formats, thus reducing staff anxiety associated with too much documentation.

During the session, staff were also taught that if the set targets on the clinical pathway were not met as per the plan, they were to be recorded as a variance, and would be placed in appropriate variance code with an explanation as to why that variance occurred. During the session they were introduced to the data collector for the study and the case manager of urology, to guide them whenever required.

Recruitment of subjects was achieved as per the sampling plan of the study. All patients who met the inclusion criteria were recruited from ambulatory urology clinic discharge. The other subjects were staff involved in the care of patients with TURP surgical intervention. Members of staff were recruited if they were involved in the delivery of patient care for four to five shifts, for four to five subjects (patients) with TURP surgical intervention.

PREPARATION OF RESEARCHER

It was necessary for the researcher to prepare herself for the research process. The researcher decided not to get involved in the data collection, so as to avoid any information bias, therefore two separate data collectors were recruited for each phase (control/experimental) of the study.

RECRUITMENT AND PREPARATION OF DATA COLLECTOR

The data collector position was filled by two nurses hired through the recruitment department of AKUH to achieve the set goals of the study and to follow through data collection. Both were trained by the researcher until they achieved inter rater reliability, and were prepared, over a period of 16 months, to administer the data collection instruments and ensure the smooth running of data collection. In order to have accuracy in recording the data, the data collectors were trained for Windows-based SPSS 10.0 version, and were advised to enter the data directly on computer.

PREPARATION AND ENHANCEMENT OF CASE MANAGER'S ROLE

The literature search supported the case manager's active involvement in the implementation of the clinical pathway. Therefore, the existing case manager in the section of Urology was involved in the project. She participated actively in the multidisciplinary team in order to design the clinical pathway for TURP, and during the implementation phase, she provided continuous guidance to medical and nursing staff to get acquainted with this new model of clinical practice.

Benson et al. (2001) stated that case managers must ensure that the patient receives appropriate care across the care continuum. They coordinate discharge planning with the patient and family, taking into consideration the patient's insurance coverage and financial resources. They work collaboratively with the unit's multidisciplinary team to individualize patient care recommendations. They conduct

structured multidisciplinary rounds, emphasizing the clinical pathway elements and length of stay for each patient. In addition to coordinating patient services, they are responsible for utilization review and resource management. The case manager provides clinicians with both a model and the technological tools to strategically manage the quality and cost of a patient's care throughout an entire episode of illness. Outcomes management involves a multidisciplinary effort to achieve optimal practice strategies for the patient population (Wajner, 1996).

SUMMARY

The above section presented the implementation phase of the study and argued that it is very crucial for the researcher to ensure that staff, researcher and data collector are well prepared to follow and track each and every step of the implementation phase.

Section Six: Data Collection

This final section of the methodology chapter will present an overview of the data collection process. To a large extent the success of a study depends on the quality of the data collection methods chosen and employed. Types of data collection methods used in this study were observation, interviews, questionnaires and available data/records of the patient's medical condition.

DATA COLLECTION METHODS

Data collection for all types of variances such as pre-admission, patient, nursing, physician, hospital and discharge related variances was monitored through the review of patient's records and observational method. Furthermore, the monitoring of clinical indicators, post-operative problems, and post-operative complications were also measured through medical record review and observational method. The purpose of this was to monitor all types of variances in both study groups. During the data collection

process, the researcher observed all patient processes from admission to discharge and recorded variances on the developed instruments and variance monitoring checklists. Wood and Haber (1998) stated that the observational method could be the best way to operationalize some variables of interest.

Participant observation has several strengths as a data collection method, the main one being that it focuses on actions and interactions of people in the natural setting. If a study is designed to obtain substantive findings about human behavior, observation may be the only way to ensure the validity of the findings (Sullivan & Oxford, 1999).

Similarly, in the current investigation, the researcher desired to select observations of nursing practice as described in the nursing related variances. Beanland, Schneider, Wood, and Haber (1999) stated that observation is particularly suitable as a data collection method in complex research situations that are best viewed as total entities that are difficult to measure in parts. In addition, observational methods can be the best way to operationalize some variables of interest in nursing research, particularly individual characteristics and conditions, such as traits and symptoms, verbal and non-verbal communication behaviors, activities, skill attainment and environmental characteristics. All of these observations were made by the researcher, and were recorded on structured observational sheets and data collection instruments. The multidisciplinary team prepared a list of observations to be made and recorded on the observation sheet. Burns and Grove (1999) stated that in structured observational measurement, the researcher carefully defines what is to be observed and how the observations are to be made, recorded, and coded. In most cases, a category system is developed for organizing and sorting the behaviors or events being observed. The data collection instruments and checklists were used to indicate whether a behavior occurred

or did not occur such as pre-admission, patient, nursing, physician, hospital and discharge related variances and also post-operative problems and post-operative complications.

In the current investigation the researcher was interested in determining how medical and nursing staff deliver patient care to the patients with TURP surgical intervention, in order to get a more accurate picture of the behaviors of health care workers rather than asking questions of them, and also the observation method was useful to observe development of post-operative problems, complications, delays, other symptoms and problems which occurred during the patient's hospitalization.

In this type of methodology of data collection, the researcher was not merely looking at what was happening, but rather watching with a trained eye for certain specific events. Beanland, Schneider, Wood, and Haber (1999) stated that scientific observations must fulfill the following four conditions: a) the observations undertaken are consistent with the study's specific objectives; b) there is a standardized and systematic plan for the observation and the recording of data; c) all of the observations are checked and controlled; and, d) the observations are related to scientific concepts and theories. The current study followed the same sequence of observation as stated by Beanland, Schneider, Wood, and Haber (1999).

Patient's medical records and other available data were also utilized, as they were an important source of information to note the demographic data and clinical progress of patients. This allowed the researcher to overcome the problem of asking the same questions which had already been asked by other health team members.

DATA COLLECTION PROCESS

Data was collected first from the control group for the period of eight months from August 1, 2001 to March 31, 2002. All the patients undergoing surgical operation of

TURP were recruited in the sample, and all five study objectives (documented in Chapter One) were measured on the subjects in the control group. This group received their medical and nursing treatment and care according to existing methods of organizing, implementing and evaluating medical and nursing care for a period of seven months. This was followed by data collection from the experimental group for the period of nine months from April 1, 2002 to December 31, 2002. All patients who underwent TURP and met the inclusion criteria received their medical and nursing treatment and care utilizing integrated clinical pathway of TURP.

A colored card with the letters CPI (clinical pathway implementation) was placed at the bedside to remind nurses and clinical physicians that clinical pathway was being followed on the patients, in order to ensure that everyone delivered the care according to the clinical pathway model. In spite of the educational sessions, the case manager and in-charge nurses had to remind health team members to follow the treatment and care through clinical pathway, and it took some time for staff to get adjusted to the new system.

As discussed earlier, the prime purpose of the clinical pathway was to replace all other formats of documentation in order to prevent duplication and save the time of medical and nursing staff. Furthermore, all types of documents were kept together to increase multidisciplinary collaboration. Besides clinical document formats, the variance tracking formats were utilized for tracking daily activities and recording variations from the clinical pathway. Clinical staff entered all these variances directly into a computer data sheet Windows-based SPSS 10.0 version. The advantages of such a system were that entering data directly into the computer overcame the problem of manual data collection and analysis.

All types of variances, such as pre-admission, patient, nursing, physician, hospital and discharge related variances, were recorded during hospitalization on variance monitoring sheets, along with the cause of variance, frequency and possible solutions taken to overcome the occurrence of variances. Ahmed and Keng (1998) stated that "essential components of variance recording are: cause of variation, frequency of occurrence, solutions to avoidable delays, clinical outcomes, complication, and readmissions" (p. 25). The researcher ensured that all records were completed according to the set clinical pathway format to ensure consistency.

Patient satisfaction surveys were completed by two methods. Patients were asked to complete the structured questionnaires by themselves, and at times when it was not feasible for patients, the interview process was initiated.

DATA COLLECTION MANAGEMENT

Considering the size of the project and the number of data variables to be monitored at different intervals, the researcher developed a comprehensive plan to ensure that all required and necessary information was completed through observation, medical record review and day-to-day conversation with patients. There were numerous day-to-day meetings and interactions to ensure accuracy in data collection. The researcher also did several spot checks on the practices of the data collector while she was interviewing the patient or completing the formats of data collection instruments. Furthermore, the researcher did a complete review of every 10th folder to ensure accuracy and completeness of data.

SUMMARY

Section Six discussed all the steps involved during the data collection process. It has been outlined that the researcher needs to play a significant role in managing the data collection process in order to obtain accurate and complete data. The section also

discussed the problem faced during the transitional process, and how the researcher, data collector and case manager managed these problems.

Conclusion

In conclusion, the discussion in Chapter Four has presented a broad overview of the methodological approaches employed in the present investigation, including the research design, the research setting, the operational definitions of terminologies used in the current investigation, the development of instruments and ensuring their validity and reliability, the implementation phase, and finally, the data collection process.

The researcher observed that working in collaboration with a multidisciplinary team and observing all the processes involved in the methodology was not only beneficial for identifying appropriate methodology, but enhanced the outcomes in the overall methodology processes.

CHAPTER FIVE
STUDY FINDINGS

Introduction

This chapter presents an in-depth analysis of the data collected during the control and experimental phases of the investigation. The results are presented in the context of the research objectives and hypotheses outlined in Chapter One. The study findings include all the findings, both supportive and non-supportive. Beanland, Schneider, Wood, and Haber (1999) stated that all results of the study should be reported whether or not they support its aim. Tables and figures are used to illustrate and summarize data for presentation. An interpretation of the findings is made, drawing on the theoretical framework, and interpretations are made based on the findings and theory.

Methodology

The survey findings were achieved through statistical analysis of the data using the Statistical Package of Social Sciences (SPSS) assisted statistical analysis software program, SPSS 10.0 version. Various statistical tests have been used to formulate the conclusions and present the findings. They were descriptive analysis, inferential analysis, chi-square, t test and multivariate analysis, and also a detailed analysis of the findings of the patient and staff satisfaction survey, where subjects were invited to contribute comments and suggestions.

In the current investigation, descriptive analysis was conducted for categorical data. Burns and Grove (1999) stated that descriptive statistics are used primarily as a means to describe the characteristics of the sample from which the data were collected,

and to describe values obtained from the measurement of variables. The current investigation used descriptive analysis for age and other demographic data.

Frequencies were determined as percentages. Burns and Grove (1999) stated that the frequency distribution is usually the first strategy used to organize the data for examination. The group frequency distributions are used with continuous variables, such as age. The percentage distributions indicate the percentage of the sample whose scores fall into a specific group, as well as the number of scores in that group. Percentage distributions are particularly useful in comparing the present data with findings.

Standard deviation was used in age, measurement of waiting time, and length of stay. Burns and Grove (1999) stated that the standard deviation is the square root of the variance. Just as the mean is the average score, the standard deviation is the average difference (deviation) score. The standard deviation provides a measure of the average deviation of a score from the mean in that particular sample. It indicates the degree of error that would be made if the mean alone were used to interpret the data.

Inferential analysis was conducted for continuous data. Beanland, Schneider, Wood and Haber (1999) stated that inferential statistics allow researchers to estimate population parameters and to test hypotheses. The use of these statistics allows researchers to make objective decisions about the outcome of the study. Such decisions are based on the rejection or acceptance of the null hypothesis, which states that there is no relationship between the variables. If the null hypothesis is accepted, the result indicates that the findings are likely to have occurred by chance. If the null hypothesis is rejected, the researcher accepts the scientific hypothesis of a relationship being present between the variables and that this relationship is unlikely to have occurred by chance.

In the current investigation inferential analysis along with a combination of other statistical tools was widely used for all types of variables.

"P"-values were calculated to determine the statistical significance of the observed differences in the variances and outcomes, clinical indicators, cost of the treatment, patient satisfaction, and staff satisfaction. Beanland, Schneider, Wood and Haber (1999) stated that the results of statistical tests are reported as significant or non-significant. Obtaining a probability value of less than 0.05 or 0.01 (depending on the level of significance set by the researcher) indicates a statistically significant result.

Chi-square test was used for categorical variables as a test of significance in the current investigation. Chi-square is a non-parametric statistic that is used to determine whether the frequency in each category is different from what would be expected by chance (Beanland, Schneider, Wood & Haber, 1999). Burns and Grove (1999) stated that the chi-square test of independence determines whether two variables are independent or related; it can be used with nominal or ordinal data. The procedure examines the frequencies of observed data and compares them with the frequencies that could be expected to occur, if the data categories were actually independent of each other. The results of the mathematical calculation are a chi-square statistic, which is compared with the chi-square values in a statistical table. If the value of the statistic is equal to or greater than the value identified in the chi-square statistical table, the researcher can conclude that there are significant differences between the two variables.

Pre-admission, patient, nursing, physician, hospital, and discharge related variances were analyzed through chi-square. Post-operative problems, post-operative complications, and patient and staff satisfaction were also analyzed through the use of the chi-square test, and identified values were compared to chi-square statistical table to arrive at the conclusion regarding the significance of the findings.

An independent t test was used for continuous variables. Burns and Grove (1999) stated that one of the most common analyses used to test for significant differences between statistical measures of two samples is the t test. The result of the mathematical calculation is a t statistic. This statistic is compared with the t values in a statistical table. The table is used to identify the critical value of t'. If the computed statistic is equal to or greater than the critical value, the groups are significantly different. The Statistical Package of Social Sciences (SPSS) was used for statistical analysis, with Alpha set at 0.05 considered statistically significant.

Multivariate statistical analysis was used for analysis of financial variances. Sullivan and Axford (1999) describe this type of analysis as a class of ANOVA model, and the multivariate tests of significance provide the user with four different test statistics for evaluating multivariate differences. The most commonly used tests are Pillai's, Hotelling's, Wilk's, and Roy's. A value is given for each of the multivariate tests (e.g. 0.01133 for Pillai's trace). These, in turn, are converted to F-ratio's (in this case 0.97717), and the significance test for this F-ratio is applied for four and 686 degrees of freedom (df). These values are calculated by the computer from formulae, which can be found in a variety of advanced textbooks. Finally, a detailed analysis was conducted on the comments and suggestions outlined by the study subjects in the patient and staff satisfaction surveys.

Presentation of Results

As stated above, the study subjects were of two types, patients and staff, and therefore there are two sets of results. The results achieved from patients, who were the major group in the study, will be presented first, followed by the results of data collected from staff. The term subject is used throughout the chapter as it was used in the survey research.

The results of the analysis are described in the same order as the way the study instruments were designed and completed, as illustrated in Figure 4.

Section One describes the results related to demographic information, followed by the results of variances and outcomes.

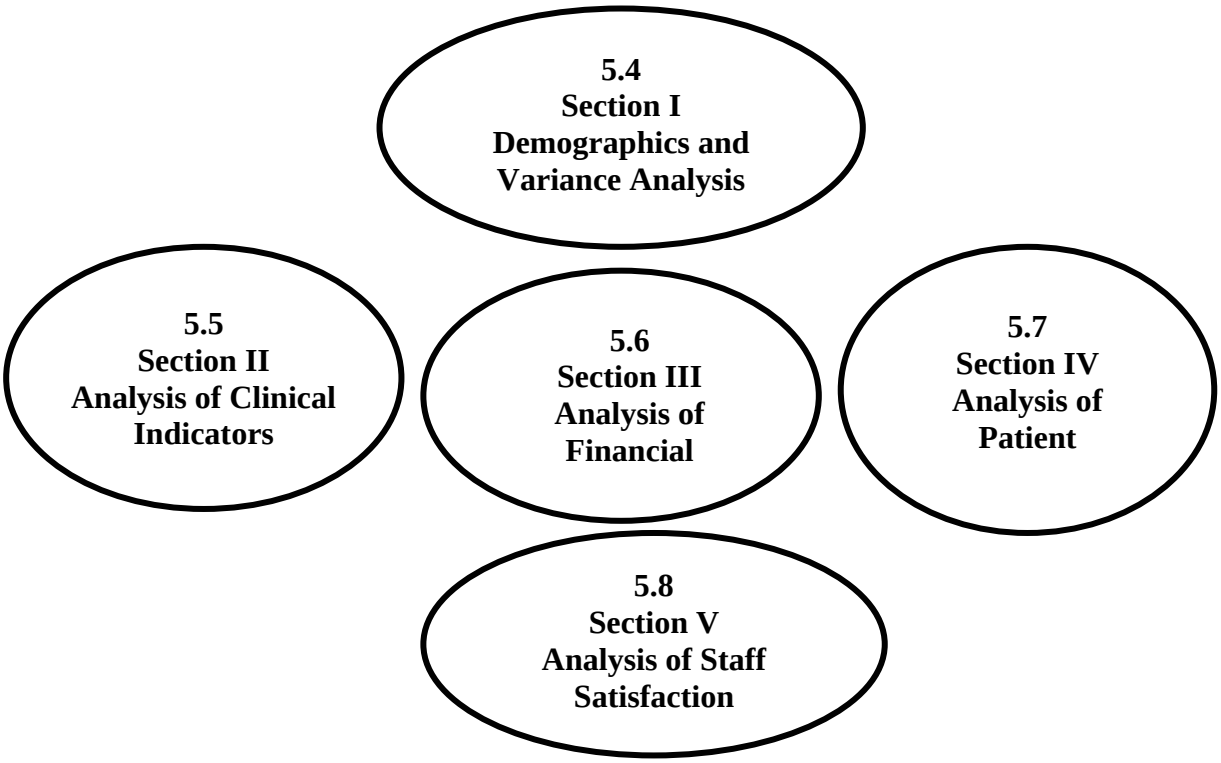
Section Two outlines the results of clinical indicators, divided into three areas: post-operative problems (any problem that occurred during post-operative hospitalization); post-operative complications (any complication that occurred during post-operative hospitalization); and other indicators (surgery after hospital day two, intravenous fluid administration for more than two days post-operatively, intravenous antibiotic administration for more than two days post-operatively, hospital inpatient mortality, or re-hospitalization within thirty days time after discharge).

Section Three discusses the results related to length of stay as per clinical pathway plan and financial variances. Financial variances include bed charges, attendants' fees, surgical fees, anesthesia charges, special consultancy charges, pharmacy charges, medical/surgical supplies charges, diagnostic charges (laboratory and radiology), operation room charges, and other charges. Differences in the mean cost of the treatment in the control and experimental groups were measured and computed.

Section Four presents the results of patient satisfaction survey for the control and experimental groups. Differences in patient's overall satisfaction for both groups were computed, and an analysis of each question was also executed.

Finally, Section Five presents the results of staff subjects, their demographics, working experience, category, and their overall satisfaction for control and experimental groups, and analysis of each question of staff satisfaction.

Figure 4
Presentation of results



Section One: Analysis of Demographics and Variances

This section gives an overview of the findings of the demographic and variance analysis. The first objective of the current study was to measure outcomes/variances of clinical pathways on patients undergoing TURP. An essential part of the use of clinical pathways is the collection and analysis of information obtained when patients deviate from the pathway. Data analysis provides useful and accurate information on the frequencies and causes of variations in patient care. The analysis of variances in the clinical pathway encourages the multidisciplinary team to adhere to the guidelines and standards set in the clinical pathway, or justify the reasons for the variation. In this way, clinical pathways compel doctors and health care providers to critically evaluate and understand the basis of clinical evaluation. Benson (2001) stated that analysis of

information revealed through variance tracking provides unremarkable feedback on clinical pathways, and is therefore extremely useful for case and outcomes management. Aggregate variance analysis can support changes in practice and protocol that improve patient-care outcomes and reduce length of stay and cost outcomes for the entire patient population. The variances were of six types, related to pre-admission, patient, physician, nursing, hospital, and discharge. Each type of variance has several sub-categories, and codes were assigned for all sub-categories to assist in the smooth analysis of these variances. The variances were calculated for control and experimental groups.

One of the key aims of the researcher was to recruit as study subjects all patients who met the inclusion criteria and went through TURP during the study period. In many regards this aim was achieved, but the duration of data collection, initially set for twelve months, was extended to sixteen months to achieve the sample size for the experimental group. The control group's data was collected for eight months, whereas experimental group data collection was completed in nine months. A total of 200 patients participated in the control and experimental phases of the study.

DEMOGRAPHICS

There was no statistically significant difference between the mean ages of the two groups, as illustrated in Table 2. The age of subjects in the control group ranged from the lowest at 50 years to the highest at 95 years, with a mean age of 67.15 years and (SD 8.85). The age of subjects in the experimental group ranged from the lowest at 50 years to the highest at 80 years, with a mean age of 65.78 years and (SD 6.88).

Table 2
Age of study groups

Group	M	SD	Minimum	Maximum	Range
Control group	67.15	8.85	50	95	45
Experimental group	65.78	6.88	50	80	30
Both groups	66.46	7.93	50	95	45

There was no statistical significant difference in the geographical origin of the study population of both groups. The majority of subjects were from Karachi, which is where the hospital is located. One hundred and eighty three subjects (91.5%) of both groups were from Karachi, with 8.5% were from other parts of Pakistan. Among this group, 2% were from cities in other parts of the world, such as Dubai, London and Nairobi.

There was no statistical significant difference in the employment status of the control and experimental groups. Seventy-five (75%) of subjects were retired or unemployed; only 25% of subjects were employed. The types of employment were business, labor, journalist, radiologist, and constructor.

The utilization of different bed category was also measured to assess affordability and social status of the study subjects. There was no statistical significant difference in the bed category requested by the patients as indicated by chi-square results $p = 0.067$. Forty-nine percent of subjects in the control and experimental groups requested general ward bed category and 17% requested semi-private category; therefore, there was no difference in the bed category of general ward and semi-private among control and experimental groups. However, the private wing bed category request was slightly higher in the experimental group, scoring 37% in experimental and 28% in the control group, this finding was not statistically significant as the p value was 0.067.

Pre-admission variances

Tables 3 and 4 present the results of the four types of pre-admission variances: waiting time at admission office (the time computed from patient's entry at the admission office to the time patient was sent to nursing units); waiting time at nursing station (the time computed from patient's arrival at nursing units to the time patient was taken to the bed); utilization of pre-anesthesia clinic (patient utilized pre-anesthesia clinic and anesthetic assessment conducted in the clinic); and pre-op teaching conducted in the clinic (the required teaching related to TURP surgery conducted to patients in clinic by nurses).

These latter variances were computed in the ambulatory care setting of AKUH prior to the patient's hospitalization. The main reasons for selecting these pre-admission variances were that the patient satisfaction survey data collected by the marketing department of AKUH identified major delays in these areas, and patients had high complaint rates regarding these four areas. Therefore, the multidisciplinary team decided that these four core processes should be assessed as pre-admission variances. Utilization of the pre-anesthesia clinic was also selected as a pre-admission variance because patients were admitted a day prior to surgery in order to have pre-anesthesia assessment rather than utilizing the pre-anesthesia clinic as ambulatory patients.

A statistically significant difference in the waiting time between control and experimental groups was observed. The mean waiting time of patients at the admission office for control and experimental groups showed significant difference; however, the mean waiting time of patients at nursing units showed no significant difference between both groups, as illustrated in Tables 3. This showed that patients were quickly allocated to their beds after arrival at the nursing station, resulting in no waiting at this point.

Table 3
Waiting time at admission office (N = 200)

	N	Mean difference	SD	t test	Significance (2 tailed)
Control	100	40.29	84.00		
Experimental	100	1.00	1.00	4.767	.001*
Waiting time at nursing units (N = 200)					
Control	100	.60	4.24		
Experimental	100	.30	3.00	.579	.563

* = Significant

The chi-square results computed for utilization of pre-anesthesia clinic were significant, indicating that the experimental group utilized the pre-anesthesia clinic more than the control group, as shown in Table 4. Utilization of the pre-anesthesia clinic is a cost-saving strategy, which benefits the patient by saving one day of hospitalization. The chi-square results for pre-op teaching conducted in the clinic were also significant, indicating that nursing staff conducted more education sessions with the experimental group than with the patients of the control group.

Table 4
Utilization of pre-anesthesia and pre-op teaching in clinic (N = 200)

	Pre-anesthesia clinic		Pre-op teaching	
	Yes	No	Yes	No
Control	55	45	08	92
Experimental	85	15	84	16
Chi-square	24.066		116.264	
P value	.001*		.001*	

* = Significant

Patient related variances

The purpose for measuring patient related variances was to assess the disease patterns and co-morbidities among both the control and experimental groups. The patient related variances selected by the multidisciplinary team included patients with conditions such as cardiac problems, hypertension, diabetes, anemia, urinary tract infection, and patients who had undergone any other surgeries on the same day they had TURP. The occurrence of cardiac problems in both groups was the same; 29 patients in each group (58 in total) had cardiac problems; 37 patients in the control group and 31 patients in the experimental group had hypertension. Occurrence of diabetes was higher in the control group than in the experimental group; 22 patients in the control group and 7 patients in the experimental group had diabetes. Only 10 patients had anemia, 2 from the experimental and 8 from the control group, indicating that, in spite of the older age of the study subjects, anemia was quite uncommon. Urinary tract infection also had low occurrence in both groups; a total of 16 subjects, 12 from the control and 4 from the experimental group, had UTI.

Chi- square results illustrated in Table 5 showed no difference in patient related variances associated with cardiac problems and hypertension between both study groups. A significant difference was observed in patient related variances associated with diabetes, anemia, and UTI. The control group had a higher incident of these diseases than the experimental group.

Table 5
Patient related variances (N = 200)

	Cardiac		Hypertension		Diabetes		Anemia		UTI		Other surgeries	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Control	29	71	37	63	22	78	08	92	12	88	65	35
Experimental	29	71	31	69	07	93	02	98	04	96	26	74
Chi-square	.000		.802		9.074		4.348		4.348		32.732	
P value	1.000		.370		.003*		.037*		.037*		.001*	

* = Significant

Patients having other surgery on the same day as TURP were included in the study by the multidisciplinary team, who decided that patients who could meet the length of stay criteria of five days would be included. The chi-square results were significant, indicating that the subjects of the experimental group had fewer surgeries on the same day compared to subjects in the control group. This was because the pathway intervention was only administered to patients who met the inclusion criteria of length of stay of five days. Therefore fewer subjects of the experimental group had other surgery on the same day they had TURP.

One more variance, which was measured as part of patient related variances, was the general health status of both groups. General health was measured in terms of good health (patients has no co-morbidities), satisfactory health (patient has one or two co-morbidities with medical management but no impact on lifestyle), and poor health (patient has more than two co-morbidities, having significant impact on the health of the patient and interfering with normal lifestyle). The chi-square results were X^2 (2, N=

200) =6.75, p= .08, showing no significant difference between both groups, and indicating that both groups were similar in terms of general health.

Physician related variances

Physician related variances included tasks which physicians were required to perform and, if not completed, were considered as physician related variances. Seven types of physician related variances were agreed upon by the multidisciplinary team members to be measured in the current investigation. These were delayed consultation by physician (physician delayed to see the patient for four – six hours when required); delayed evaluation (physician delayed to evaluate the patient for four – six hours); appropriate and complete written physician order; discussion of plan of care to the patients by physicians; delayed investigation orders written by physicians (delayed investigation orders for four – six hours); delayed follow-up; and delayed education by physicians to the patients (delayed in education for four – six hours by physician). The results of these variances indicated that there was a considerable variation between the two groups. Table 6 presents the Chi-square results of these variances, indicating significant difference between both groups in all seven types of physician related variances.

Among the physician related variances, delayed consultation and delayed evaluation were further monitored by calculating the number of days. The result of independent t test for delay consultation were t (200) = 8.25, p= .001 (two-tailed), indicating significant difference. The delayed consultation in the experimental group was reduced to 0.02 days from 1.35 days in control group. Similarly, the result of independent t test for delayed evaluation were t (200) = 8.40, p= .001 (two-tailed), indicating significant difference. The delay evaluation in the experimental group was reduced to 0.02 days from 1.65 days in control group.

Table 6
Physician related variances (N = 200)

	Delay in consultation		Delay in evaluation		Appropriate order		Delay in follow-up		Delay in education		Discussed plan of care		Delay in investigation	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Control	61	39	62	38	12	88	52	48	75	25	27	73	55	45
Experimental	03	97	02	98	37	63	10	90	08	92	88	12	15	85
Chi-square	77.298		80.663		16.894		41.234		92.452		76.133		35.884	
P value	.001*		.001*		.001*		.001*		.001*		.001*		.001*	

* = Significant

Hospital related variances

Hospital related variances are related to operational insufficiencies in the hospital system. The five variances which the multidisciplinary team agreed should be monitored in this category were variances related to equipment availability, delays in investigation results (four – six hours delay by laboratory/radiology to deliver investigation results to nursing units), problems in patient care with support services (delayed responses by food services, pharmacy, and physiotherapy departments), cancellation rates (surgery cancelled on the day of surgery), and no show rates (patient did not turn up on the surgery day). The chi-square results outlined in Table 7 indicate no differences in hospital related variances between the two groups. This shows efficiency in the hospital systems as no hospital related variances were observed or reported.

Table 7
Hospital Related variances (N = 200)

	Equipment availability		Delay Results		Problems with support		Cancellation rate		No show rate	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Control	97	03	02	98	16	84	08	92	05	95
Experimental	100	00	00	100	11	89	08	92	11	89
Chi-square	3.046		2.020		1.070		0.00		2.446	
P value	0.81		.155		.301		1.00		0.191	

Nursing related variances

The hospital related variances were followed by the other most important type of variances**,** which were nursing related variances. Six types of variances were assessed and computed in this category. They were complete documentation by nurses in every aspect of patient care during hospitalization of patient; discussion of plan of care with patients and families by nurses; appropriate assessment of patient; notification to physician by nurses about patient's condition when required; carrying out physician orders; and delayed patient education by nurses (patient education delayed for four – six hours). Table 8 displays the chi-square results of these variances, indicating significant difference between both groups. Table 8 shows that pathway intervention introduced in the experimental group significantly enhance the quality of care delivered by nurses. These improvements may reflect that nurses are becoming familiar with the use of clinical pathways, and that training and practices related to clinical pathways are reflected in the clinical outcomes for the patient, thus reducing occurrences of nursing related variances.

Table 8
Nursing Related variances (N=200)

	Complete documentation		Discussion of plan of care		Appropriate Assessment		Notification to Physician		Carry out Physician orders		Delay in Education	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Control	06	94	27	73	09	91	26	74	27	73	94	06
Experimental	48	52	88	12	81	19	75	25	87	13	18	82
Chi-square	105.344		76.133		119.548		48.025		74.902		117.208	
P value	.001*		.001*		.001*		.001*		.001*		.001*	

* = significant

Hospital discharge variances

The final part of variance monitoring was variances related to discharge of patients. Six types of variances were monitored in this category: discharge delay due to delivery of medication; timely documentation of discharge notes by nurses; time of discharge orders written by physicians; time of discharge procedure; time patient left hospital (time patient left the nursing unit after completion of discharge procedure); and discharge delays due to family reasons after completion of discharge procedure. Table 9 displays the chi-square results of these variances. There was no significant difference between both groups in discharge delays due to non-availability of discharge medication. However, there was a significant difference found in discharge notes written by nurses. The experimental group showed comprehensive writing of discharge notes by nurses due to pathway intervention. There was no significant difference in the discharge timing after completion of discharge procedure. However, discharge delays due to patient and family show significant improvement, where mean discharge time was reduced to 84.44 minutes (SD 69.61) in the experimental group, compared to 297.27 minutes (SD 282.10) in the control group. One of the concerns identified in discharge related variances was that physicians were not writing the time on the physician orders related to discharge. Discharge orders for 65% of subjects in both groups did not have any time recorded, consequently 67% of the subjects were not assessed for the discharge process and delays were associated with discharge.

In discharge related variances, one other variance measured was the number of patients who were discharged before 1600 hours. The data analysis showed no significant difference in this area, indicating that 58% of subjects in both study groups left the hospital by 1600 hours, while 42% subjects went home after 1600 hours. The reasons for discharge delay were further explored by monitoring the delays by families,

after completion of discharge process. The result of independent t test for discharge delay were t (200) = 8.25, p= .001 (two-tailed), indicating significant difference. The delayed discharge by families in experimental group was reduced to 69 minutes in the experimental group from 282 minutes in the control group.

Table 9
Hospital discharge variances (N = 200)

	Delay in medication delivery		Timely documentation of notes		Time of discharge order written by physician		
	Yes	No	Yes	No	< 1400 hours	> 1400 hours	Not mentioned
Control	01	99	55	45	31	08	61
Experimental	0	100	100	00	19	12	69
Chi-square	1.005		60.126			4.172	
P value	0.317		.001*			0.124	

Table 9 (continued).

	Time of discharge procedure			Time patient left hospital	
	<2 hours	>2 hours	Time not mentioned	Before 1600 hours	After 1600 hours
Control	32	1	61	54	45
Experimental	33	0	69	62	37
Chi-square		1.015		1.332	
P value		0.602		0.272	

Section Two: Analysis of Clinical Indicators

This section will present the analysis of clinical indicators as described in objective two. These indicators were derived from the current evidence to monitor the clinical quality in both groups undergoing TURP. The analysis of clinical indicators is divided into three areas: a) post-operative problems (any problem that occurred during post-operative hospitalization); b) post-operative complications (any complication that occurred during post-operative hospitalization); and, c) other indicators (i) surgery after hospital day two, (ii) intravenous fluid administration for more than two days post-operatively, (iii) intravenous antibiotic administration for more than two days post-operatively, (iv) hospital inpatient mortality, and (vii) re-hospitalization within thirty days time after discharge).

POST-OPERATIVE PROBLEMS

The three post-operative problems selected by the multidisciplinary team members as clinical indicators were occurrence of electrolyte imbalance, constipation, and phlebitis in post-operative TURP patients during hospitalization. These were selected from the current evidence identified in the literature related to TURP. Table 10 displays the results of post-operative problems, indicating significant difference in electrolyte imbalance, constipation, and phlebitis between the groups. Post-operative problems were reduced in the experimental group compared to the control group, due to clinical pathway intervention.

Table 10
Post-operative problems (N = 200)

	Electrolyte Imbalance		Constipation		Phlebitis	
	Yes	No	Yes	No	Yes	No
Control	28	72	86	14	78	22
Experimental	06	94	18	82	17	83
Chi-square	17.151		92.628		74.007	
P value	.001*		.001*		.001*	

* = Significant

POST-OPERATIVE COMPLICATIONS

The two main post-operative complications selected from the current evidence by the multidisciplinary team were occurrence of UTI and hematuria in the first 24 hours during post-operative hospitalization. The UTI in this section is a post operative complication and is different then the UTI mentioned in patient related variances on page 177. The incidence of post-operative complication of UTI was less in the experimental group, indicating significant difference due to clinical pathway intervention; whereas no statistically significant difference was found in the occurrence of hematuria, as illustrated in Table 11.

Table 11
Post-operative complications (N = 200)

	UTI		Hematuria	
	Yes	No	Yes	No
Control	17	83	90	10
Experimental	06	94	94	06
Chi-square	5.944		1.087	
P value	.015*		.298	

* = Significant

OTHER CLINICAL INDICATORS

The other clinical indicators selected by the multidisciplinary team were: (i) surgery after hospital day two, (ii) intravenous fluid administration for more than two days post-operatively, (iii) intravenous antibiotic administration for more than two days post-operatively, (iv) hospital inpatient mortality, and (vii) re-hospitalization within thirty days after discharge. The chi-square results for surgery after hospital day two and intravenous fluid administration for more than two days post-operatively were not computed, as only four to five subjects in both study groups fell into this category. The chi-square results regarding intravenous antibiotic administration >2 days were X^2 (2, N = 200) = .519, p = .471, showing no significant difference between both groups. However, these findings were clinically significant, as altogether 80 subjects (40%) were given antibiotics after the second day of surgery. There was no statistically significant difference observed between the two groups for in-patient hospital mortality and re-hospitalization within 30 days, as no patient expired due to TURP surgery, and none was re-hospitalized for the same health problem or due to any complication of the surgery.

Section Three: Analysis of Length of Stay and Financial Variances

LENGTH OF STAY

The third section of this chapter discusses the results related to length of stay and financial variances as described in the study objective three. The agreed length of stay by the multidisciplinary team for TURP surgical procedure was five days. The multidisciplinary team arrived at this decision by reviewing the data of TURP patients admitted to AKUH for the last two years, and looking at the trends of patient length of

stay in other hospitals. The length of stay was reduced by half a day, and the mean length of stay therefore improved in the experimental group to 4.69 days compared to the control group where the mean length of stay was 5.20 days. However, the statistical analysis of independent t test, as illustrated in Table 12, did not show any significant difference in the length of stay of both groups.

Table 12
Length of Stay (N=200)

Length of stay (5 days)	Mean Duration	SD	t test	Significance (2 tailed)	Discharge within 5 days	Discharge after 5 days
Control	5.20	2.40			71	29
Experimental	4.69	1.76	1.717	0.088	74	26

* = Significant

FINANCIAL VARIANCES

AKUH is a very large private health care organization in Pakistan, which is a low-income country. It consists of a great variety of providers and is used by a broad cross-section of the population. Therefore, there are substantial concerns about the quality of care, especially at the more informal end of the range of providers. In patient satisfaction surveys conducted by the marketing department, the customers of AKUH reported that the cost of service at the hospital is very high. The literature reviewed in the previous sections has identified the significant role clinical pathways can play in reducing the cost of care by reducing length of stay and coordinating core processes of patient care. Similarly the beneficial impacts of clinical pathway on financial variances were measured in the current investigation.

The financial variances in the current investigation were selected from the existing financial system of AKUH. The overall charges of TURP surgical intervention

were broken into ten components: bed charges (charges of bed according to bed locations such as ward, semi-private and private); attendant fee (the fee of the daily round by attending physician); surgical fees (fee of surgeon incurred for the specific surgical procedure); anesthesia charges (charges for type of anesthesia used during surgery); special consultancy charges (charges related to any special consultation such as cardiology and gastroenterology services); pharmacy charges (charges of medications and intravenous infusions used during inpatient hospitalization); medical/surgical supplies charges (charges incurring on medical surgical supplies such as syringes, needles, cannulas, etc.); diagnostic charges (charges incurred for laboratory, radiology and neurophysiologic services); operation room charges (charges of operating room); and some other charges. The results of financial variances illustrated in Table 13 show no statistical significant difference in the cost of hospitalization, indicating that patient's charges or bills were the same in both study groups.

Table 13
Analysis of financial charges

Charges	Df	Mean Square	F value	Significance
Bed Charges	1	243298665.049	1.297	.25
Attendant Fee	1	1349632.086	.382	.53
Surgical Fees	1	1082045.690	.023	.88
Anesthesia	1	28246378.240	3.616	.05*
Special Consultation	1	553920.977	1.595	.20
Pharmacy	1	5772903.214	.396	.53
Med/Surg	1	105096602.839	3.029	.08
Diagnostics	1	63165966.450	2.612	.10
OR charges	1	3029864.691	.142	.70

Other charges	1	7467458569.700	1.039	.30
Total Charges	1	32344947.637	.009	.92

* = Significant

The findings of the financial variances indicated that there was only a difference of PKR800 (AUD$20) in the average cost of total charges of both groups; however, the mean value of bed charges increased up to PKR3200 (AUD$80), and the physician fee increased up to PKR2000 (AUD$50) in the experimental group, while the mean value of anesthesia, pharmacy, medical/surgical supplies and diagnostic charges decreased in the experimental group, having less impact on overall charges, as illustrated in Table 14.

Table 14
Mean difference of financial charges between two groups

Charges	Group	Mean	SD
Bed Charges	Control	8519.37	8300.75
	Experimental	10754.10	17329.87
Attendant Fee	Control	1983.16	1704.75
	Experimental	2149.60	2029.92
Surgical Fees	Control	13020.77	5965.29
	Experimental	13169.80	7696.58
Anesthesia	Control	6743.44	3259.89
	Experimental	5982.00	2267.14
Special Consultation	Control	352	286.61
	Experimental	458.63	773.89
Pharmacy	Control	5446.55	4447.77
	Experimental	5102.32	3108.65
Med/Surg	Control	7765.64	8083.05
	Experimental	6296.88	2365.28
Diagnostics	Control	5802.36	5773.83
	Experimental	4663.69	3936.04
OR charges	Control	7745.34	3151.15

	Experimental	7994.72	5669.82
Other charges	Control	12786.13	121463.73
	Experimental	405.52	718.45
Total Charges	Control	60670.03	46306.10
	Experimental	61484.84	71961.88

Section Four: Analysis of Responses to Patient Satisfaction Survey

People often think of exit and voice as the main ways patients can influence healthcare quality; that is, patients can inform providers that they are not happy with the quality of care, or they can voice their opinions in an attempt to change it. A common strategy to elicit patients' "voices' is through patient satisfaction surveys. Patient satisfaction has been conceptualized broadly as a patient's overall response to the total healthcare experience, as well as more specifically in relationship to particular aspects of care, such as nursing and medical care or admission and discharge processes. This section discusses results related to the patient satisfaction survey, which measured satisfaction of patients, the fourth objective of the study, in the control and experimental groups.

Seventy percent of patients from both study groups completed the patient satisfaction survey questionnaires themselves, while 30% of patients, who were sick or unable to read and write, requested the researcher to complete the information on their behalf.

RESPONSES TO INDIVIDUAL QUESTIONS

The aim of this analysis was to assess the significance of patient satisfaction in each service area for which the question was computed. For each service question (1–15), the mean, standard deviation, and independent t test were used to arrive at findings. The chi-square was used to analyze question 16, which related to complications occurring during hospitalization. Questions 17 and 18 were open-ended questions, which asked

subjects for further comments relating to major weaknesses and strengths in the hospital system, and any suggestions for improvement.

The analysis of question one, regarding the admission process for both study groups was significant. The subjects of the experimental group found the admission process smoother compared to the subjects of the control group. This was further evident from the analysis of question two, with significant results indicating that the experimental group was kept informed about any delays during admission procedure due to non-availability of beds/other reasons and results were in this area.

The results of question three were significant indicating that subjects of the experimental group were well-informed by health care providers of the patient's condition and progress, compared to subjects of the control group. The analysis of question four showed a significant difference, indicating that subjects in the experimental group were well-informed regarding their length of stay, compared to subjects in the control group. The findings of question five was also significant, indicating that subjects in the experimental group were well-informed about their medical progress, compared to the subjects in the control group. Question six explored patient satisfaction with the information they were given by physicians and nurses regarding administration of medication, and the findings of this question indicated a weakness in this area, as the results of the independent t test were not significant. This indicates that subjects from both groups showed less satisfaction with information regarding medication administration, and raised their concerns to address and improve this aspect of patient care. The management group needs to address this weakness in order to enhance patient satisfaction surrounding this aspect of care. The results of question seven showed that clinical pathway intervention overcame the problem of coordination, as the results of independent t test were significant indicating that the

subjects in the experimental group were satisfied with coordination among health team members compared to the subjects in the control group.

The results of question eight were significant indicating that subjects of the experimental group were more satisfied with nursing knowledge than subjects in the control group. The results of independent t test of questions nine and ten showed a statistically significant difference, indicating there was an improvement in explanation of the plan of care as it related to clinical pathway implementation by physicians and nurses.

Table 15, illustrated below, shows statistical analysis of patient satisfaction survey questionnaires from questions one to fifteen.

Table 15
Analysis of Patient Satisfaction Survey for each Question

		Mean	SD	t test	Sig. (2-tailed)
Q1	Control	4.45	.87	-4.086	.001*
	Experimental	4.84	.39		
Q2	Control	4.25	1.08	-5.185	.001*
	Experimental	4.84	.37		
Q3	Control	4.48	.85	-3.899	.001*
	Experimental	4.84	.37		
Q4	Control	4.50	.78	-2.442	.015*
	Experimental	4.75	.66		
Q5	Control	4.44	.87	-2.115	.036*
	Experimental	4.66	.57		
Q6	Control	4.40	.86	.987	.325
	Experimental	4.26	1.12		
Q7	Control	4.32	.86	-3.629	.001*
	Experimental	4.71	.64		
Q8	Control	4.42	.85	-2.961	.003*
	Experimental	4.71	.48		
Q9	Control	4.26	1.12	-1.856	.065
	Experimental	4.52	.83		
Q10	Control	4.40	.86	-2.712	.007*
	Experimental	4.67	.49		
Q11	Control	4.57	.79	-1.756	.081
	Experimental	4.73	.45		
Q12	Control	4.59	.78	-1.443	.151

	Experimental	4.72	.45		
Q13	Control	4.61	.76	-1.880	.062
	Experimental	4.78	.48		
Q14	Control	4.59	.81	-2.699	.008*
	Experimental	4.83	.38		
Q15	Control	4.65	.73	-2.029	.044*
	Experimental	4.82	.41		

* = significant

The results of independent t test of questions 11 and 12 showed no significant difference, indicating that patients required more explanation of their plan of care to be provided by physicians. The statistical analysis of independent t test of question 13 showed no difference between the two groups, indicating that, according to the patient's perspective, clinical pathway intervention did not bring any change in discharge planning. The independent t test results of question 14 showed a significant difference, indicating that clinical pathway intervention improved patient satisfaction regarding discharge arrangements. The independent t test results of question 15 also showed significant improvement, indicating that clinical pathway intervention improved patient satisfaction with overall quality in the hospital system.

Question 16 explored whether patients developed any complications during hospitalization. The results showed that the majority of subjects did not suffer any hospital related complications. Only four percent said they suffered hospital related complications; when asked about the nature of the complication, the most commonly reported were constipation, urethral bleeding after TURP, and burning sensation after micturation.

PATIENTS' COMMENTS

Question 17 of patient satisfaction survey, invited subjects to make comments related to hospital systems. Firstly, the focus of this analysis was on presenting the findings by using the participants' own words. The aggregated results or central comments for

common responses for both groups are presented, and are displayed in the order that the items appeared on the interview schedule. Secondly, the concepts identified in this analysis were subjected to a more critical analysis, to engage in a process of critical reflection on the survey data as a whole, and to examine the identified concepts in the light of the critical conceptual framework guiding the investigation.

From 200 study subjects in both groups, 10 subjects provided 17 comments and suggestions from the experimental group, while 60 subjects provided 60 comments and suggestions from the control group. These comments and suggestions are categorized under six concepts, and include attitude of health team members, discharge process, clinical assessment, cost of care, and slow services. Control group subjects gave more dissatisfaction responses and reactions, compared to comments provided by subjects in the experimental group. The details of these comments are discussed in the following section of findings.

Attitude of health team members

Eight subjects from the control group and ten subjects from the experimental group provided comments regarding attitudes of health team members. The researcher selected the following comments, as illustrated in Table 16, to present the concept of attitudes of health team members.

Table 16
Attitude of health team members

	Comments from control group regarding staff attitudes
02	Though I was given the date for operation of TURP on the 5th October 2001 but I was not assured till 4th October that the room would be available.
04	There is a need that hospital staff should develop positive attitudes in order to inform patients regarding the booking of the room in order to reduce their anxiety.
15	Staff must know the use of trash can every time wrapper of syringes, tissue papers and other things are thrown on the floor in place of trash can.

22	I suppose hospital is in over with wonder and everyone is sitting and sleeping rather than paying attention to improve hospital systems.
36	If my consultant had come on the scheduled timings for round, it would have lowered my anxiety and would have enabled me to know what is happening with me. Nurses should be trained enough so that they can implement doctor's orders independently without any reminder.
40	Nurses must help the hospital management in raising the standards of practice by improving their attitude towards the patient care.
56	While waiting for urinary flow meter I passed only 40 ml of urine, staff shouted on me that "go and again fill the bladder". This is very bad manner of communication.

Table 16 (continued)

Attitude of health team members

	Comments from experimental group regarding staff attitudes
O2	Staff is too much cooperative and they respect to patients. The doctors and nurses are so good that they give good care and it helps patients to recover soon.
08	The AKUH is very nice hospital and staff work with sincerity but intra communication requires improvement.
20	This hospital is one of the best hospital in the world or among the hospitals I have visited previously. Nursing staff are so kind and good.
26	Case managers are too good, they give proper information to my families about my condition and also they taught me how to cope with pain.

Discharge process

Two subjects from the control group provided the following comments on the topic of discharge process.

> "Discharge delays do occur, if patient is plan for discharge then they should be sent home early."

"On discharge day the consultant should visit the patient to re-assure and satisfy him with total treatment and care."

Clinical assessment

Two subjects from the control group provided the following comments relating to deficiencies in clinical assessment.

"When I had lot of abdomen discomfort, I was given injection. Nobody identified that catheter is blocked".

"I came with urinary retention and was asked to drink a lot of water for urinary flow meter procedure. This enhanced my pain further but nobody paid attention to give me priority that my procedure should be done first and I followed the routine queue."

Cost of care

Cost of care was an issue for both groups. Three comments were received from the control group subjects and four comments were received from the subjects of the experimental group about the cost of care. Table 17 elaborates the comments of both groups regarding cost of the care,

Table 17
Comments regarding cost of care

	control group
17	The fees for the treatment at the AKUH are the highest in the whole Pakistan. Therefore lower economic group cannot afford the care to AKUH.
24	
30	The AKUH is so much cost focused that bed was not allocated to me till the whole payment was made.
15	The charges of medical and surgical supplies are exorbitant, which constitute the major
36	channel of bill.
	experimental group
	Day by day the charges of AKUH are increasing as compare to other hospitals and this matter requires review by the higher management.
	Bills of the hospitalization are computed too high and please look into this matter

Slow services

Four subjects from the control group provided following comments on the slow service provided by staff.

> **"**More staff in evening is required as we were calling and they don't come."
>
> "Housekeeping needs immediate attention they take very long to come and clean the room. Shower curtain was not in place at the time of my admission and only hanged when requested."
>
> **"**Staffs are slow in responding call bell. Residents often are too busy to be available. Things are achieved after the reminder of ten times."

PATIENTS' SUGGESTIONS

Question 18, the final question of the patient satisfaction survey, invited subjects to make suggestions related to the hospital systems. This item was included to make provision for subjects to contribute information that they felt was important to the present investigation. This question was also intended to elicit information not covered in other questions. In response to question 18, the following suggestions were offered by subjects from both groups. The six concepts were derived from an analysis of question eighteen.

Hospital facilities

Four subjects from the control group offered the following suggestions related to the hospital facilities.

> **"**According to the hospital policy while one family member/close relative is allowed, but there is no proper sitting arrangement is made for them to sit and sleep."
>
> **"**The resting room to be developed for attendants of patients in order to make them more comfortable."
>
> .
>
> **"**Air-conditioning facilities should be provided in every section of the hospital."

Two subjects commented that television facilities should be provided in the hospital that will keep patients busy and diverted. The subjects also verbalized that "the TV is too high that patient has to strain too much to watch the TV."

Consultants' rounds

Subjects from the control group provided four suggestions regarding consultants' rounds. They verbalized that consultants should make their rounds on time, and that there should be a regular visit by consultants. The researcher selected the following comments to present the concept of consultant's round.

"Consultant should visit to patient on a regular basis."

"From third post-op day till today, no one from Urology team has seen me and discussed the reasons of my hospital stay that has increased my anxiety."

Medication administration

Medication administration was an issue for subjects from both groups. Three suggestions were received from the subjects in the control group and two suggestions were received from subjects in the experimental group relating to medication administration. The researcher selected the following suggestions as representative descriptions for the medication administration.

Table 17
Overall analysis of patient satisfaction survey

	Suggestions from control group regarding inaccuracy in medication administration
17	The medication should be administered on time without any delays and reminder particularly the antibiotics.
24	I suppose hospital is in over with wonder and everyone is sitting and sleeping
	Experimental Group
15	I am on intravenous medication. Nurses started intravenous medication and then she never appeared to see whether the infusion complete or not. After so many call bells, she discontinued medication.
22	I gave my anti-hypertensive drugs to the nursing staff and they provided me medication two hours late.

33	Nursing staff should know why the medication is given to patients and what is the purpose of that medication.

Delivery and quality of food

The delivery and quality of food was an issue for subjects in both groups. Nine suggestions were received from subjects in the control group, and three suggestions were received from subjects in the experimental group, related to the delivery and quality of food. The researcher selected the following suggestions as representative descriptions for the delivery and quality of food.

Table 18
Designation of study subjects and their work experience

	Suggestions from control group about delivery and quality of food
17	Please give good food with good taste.
23	Food services give the same food and patients get fed-up, as they don't provide different variety in food.
15	Please provide different varieties of food.
22	Keep cafeteria open for 24 hours, as families also came from outside Karachi.
	Experimental Group
40	Nice food to be given to patients.
33	Meal should be provided in proper dishes, particularly in the Private and Semi-private ward.

Communication

The subjects of both study groups gave suggestions regarding communication. Five suggestions were received from control group subjects and two from subjects of the experimental group related to communication. The researcher selected the following suggestions as representative comments on the issue of communication.

> **"**Staff doesn't communicate care aspects with each other. During night one staff comes to take the vital signs, another check blood sugar and they don't communicate these things with each other therefore, communication should be improved among health team members." (*Control group subject*)
>
> "Keep communication between intra departments and do not repeat test again and again if they are already done." (*Control group subject*)
>
> "There should be good communication between the staff." (*Experimental group subject*)

Billing errors

Four subjects from the control group showed concern about wrong bills and double charging, and they suggested areas for improvement in order to control these errors when patient's bills are computed. The researcher selected the following suggestions as representative descriptions for errors in bills.

> **"**Final estimates related to my bill were too high than the initial estimates. You should tell the patients what total charges would be."
>
> "Patient should be given the clear picture of the expenses that will incur during their hospitalization. This will allow the patients to manage their resources in advance and avoid last moment's disappointments."
>
> **"**Medical surgical supplies charges are extra. Please specify details as there is always over charging."

CUMULATIVE ANALYSIS OF PATIENT SATISFACTION SURVEY

After computing the analysis of each question of the patient satisfaction survey, it was also necessary to compute the cumulative score of patient satisfaction. As illustrated in Table 19, the chi-square results showed that there was significant difference between

the satisfaction results of both groups. The subjects in the experimental group were found to be more satisfied compared to subjects in the control group, indicating that the clinical pathway intervention significantly improved patient satisfaction.

Table 19
Overall analysis of patient satisfaction survey

	N	Mean Score	SD	t test	Significance (2 tailed)
Control	100	66.93	4.29	-5.695	.001*
Experimental	100	70.68	4.99		

* = Significant

Section Five: Analysis of Staff Satisfaction Survey

Objective five of this study was to measure the satisfaction of staff in the control and the experimental groups. The aim of this measurement was to assess the impact of clinical pathways on staff satisfaction. This section of the chapter discusses the findings of the staff satisfaction survey.

Quality driven institutions achieve their set targets and goals by addressing customer satisfaction. Customers in health care settings are considered to be of two types: external customers (the patients); and internal customers (the employees of the organization). Quality driven institutions believe that its external customers (patients) can only be made satisfied if its internal customers (employees) are satisfied. This is the philosophy of Total Quality Management (TQM). This philosophy was applied in the current investigation, and staff satisfaction was measured along with patient satisfaction. For each staff satisfaction survey question (three - nine) the mean, standard deviation, and independent t test were used to arrive at the findings. The aim of this analysis was to assess the significance of staff satisfaction in each service area.

DESIGNATION OF THE STUDY SUBJECTS

The study subjects were staff who participated in patient care, and question one of the staff satisfaction survey explored their designation. Out of 65 subjects, 40% were registered nurses, 6% were medical residents, 19% were nursing technicians, 4% were dietitians, 9% were medical interns, 4% were clinical nurse teachers, 3% were physiotherapists, and 10% were 'other' staff. Most of the study subjects were registered nurses and nursing technicians, as they were involved in direct patient care 24 hours per day. After nursing caregivers, the most highly represented designations were medical residents and medical interns of the Urology team.

Table 20
Designation of study subjects (N=65)

Designation	Control	Experimental	Cumulative
Medical Resident	3 (10.7%)	1 (2.7%)	4 (6.15%)
Nursing Technician	8 (28.6%)	5 (13.5%)	13 (20%)
Registered Nurse	7 (25%)	20 (54.1%)	27 (41.5%)
Dietitian	1 (3.6%)	2 (5.4%)	3 (4.6%)
Medical Intern	3 (10.7%)	3 (8.1%)	6 (9.2%)
Clinical Nurse Teacher	1 (3.6%)	2 (5.4%)	3 (4.6%)
Physiotherapy	2 (7.1%)	0	2 (3.1%)
Others	3 (10.7%)	4 (10.8%)	7 (10.7%)

WORK EXPERIENCE

Table 21 illustrates the work experience of staff who participated in the current research study, as explored by question two. It was anticipated that this information would

discover knowledge regarding how long study subjects had been engaged in clinical practice, and in what form.

Table 21
Work Experience of study subjects

Years of experience	Control	Experimental	Cumulative
< 1 year	10 (35.7%)	13 (35.1%)	23 (35%)
1 – 2 years	7 (25%)	9 (24.3%)	16 (24.6%)
3 – 4 years	7 (25%)	11 (29.7%)	18 (27.7%)
5 – 6 years	3 (10.7%)	2 (5.4%)	5 (7.7%)
> 6 years	1 (3.6%)	2 (5.4%)	3 (4.6%)
Total	28	37	65

RESPONSES TO INDIVIDUAL QUESTIONS

The aim of this analysis was to assess the significance of staff satisfaction with the particular service area nominated in each individual question. The independent t test analysis of question three showed a significant difference related to coordination of care between care providers of both groups, indicating that staff satisfaction was greater in the experimental group than in the control group. The independent t test analysis of question four showed a statistical significant difference between the two groups, indicating that clinical pathway intervention improved staff satisfaction regarding communication of the multidisciplinary team within the surgical discipline. The statistical analysis of question five showed no significant difference in staff satisfaction regarding communication of care providers among the other disciplines. The analysis of question six showed a statistically significant difference between the two study groups, indicating that the pathway intervention increased staff satisfaction surrounding the issue of provision of information to the patients by care providers.

The statistical analysis of question seven showed no statistically significant difference between the two groups regarding staff satisfaction related to patient education. The analysis of question eight showed a statistically significant difference between the two groups, indicating that staff satisfaction regarding discharge education was greater in the experimental group. The results of question nine showed statistically significant differences between the two groups, indicating increased staff satisfaction with explanations provided regarding length of stay in the experimental group, as compared to subjects on the control group. Table 22 below shows the results of question three to nine.

Table 22
Analysis of Staff satisfaction survey for each question

Questions	Groups	N	Mean	SD	t test	Sig. (2-tailed)
Q3	Control	28	4.04	.84	-2.374	.02*
	Experimental	37	4.43	.50		
Q4	Control	28	3.86	1.01	-2.288	.02*
	Experimental	37	4.30	.52		
Q5	Control	28	3.89	.99	-1.578	.12
	Experimental	37	4.24	.80		
Q6	Control	28	3.89	1.03	-2.195	.03*
	Experimental	37	4.32	.53		
Q7	Control	28	3.96	.92	-.864	.39
	Experimental	37	4.14	.67		
Q8	Control	28	3.96	.79	-1.970	.05*
	Experimental	37	4.30	.57		
Q9	Control	28	3.93	.94	-1.959	.05*
	Experimental	37	4.30	.57		

* = Significant

The results of question ten showed that all 37 study subjects were made aware of the clinical pathway of TURP. Furthermore, the results of question 11 showed that 100% of staff had attended educational classes and were more knowledgeable about clinical pathways, and the results of question 12 showed that 37 (100%) of the subjects confirmed that clinical pathway intervention was a time-saving activity for them. The results of question 13 indicated that 32 (86%) of the staff subjects were satisfied with the content of clinical pathway, and that it covered all the required information. Furthermore, the results of question 14 showed that 33 (89%) of the subjects in the experimental group agreed that the clinical pathway had enhanced multidisciplinary collaboration. Finally, the results of question fifteen outlined that 34 (92%) of subjects in the experimental group commented that coordination in care had improved due to clinical pathway intervention. These results are illustrated in Table 23.

Table 23
Analysis of staff satisfaction survey questions from 10 – 15

		Experimental (37)	Yes	No
Q10	Awareness of staff with TURP	37 (100%)	37	0
Q11	Education Regarding Implementation of Clinical Pathway	37 (100%)	37	0
Q12	Time Saving Benefits of Clinical Pathways	37 (100%)	37	0
Q13	Assessment of Staff Satisfaction on content of Clinical Pathway	32 (86%)	32	5
Q14	Interaction between physicians, nurses and other professionals	33 (89%)	33	4
Q15	Coordination in patient care	34 (92%)	34	3

STAFF COMMENTS ON BENEFITS OF CLINICAL PATHWAY

Question 16 required subjects in the experimental group to discuss their personal views regarding benefits of clinical pathway. Given that there have been no previous

evaluative studies, seeking opinion from staff on the benefits of clinical pathways was important. It seems logical to invite discussion on this area as a means of evaluating the service. It was anticipated that the subjects would engage in a process of critique of the clinical pathway intervention, which would produce information useful for refining and further development of current intervention. The aggregated results for common responses for both the questions are presented through the narration of responses to the questions, and displayed in the order that the items appeared on the interview schedule. The focus of this analysis was on presenting the findings using the participants' own words, explanations, and descriptions as much as possible. The following themes emerged from the responses to question sixteen in the staff satisfaction survey, which related to the benefits of clinical pathway.

Time saving

The main benefit of the clinical pathway perceived by the subjects of the experimental group was time saving. The researcher selected the following comments for the theme of time saving.

> "Implementation of clinical pathway saved lot of time for staff, as in terms every aspect of care was mentioned on clinical pathway."

> "In particular it saved nursing time as nurses didn't run after physicians for orders as all orders were written on clinical pathway, such as diet orders, medication orders, patient's activity and tolerance orders etc."

Coordination in core processes

The second benefit of clinical pathway perceived by the subjects of the experimental group was coordination in core processes. The researcher selected the following comments for the theme of coordination in core processes.

> "Clinical pathway has increased coordination in the core processes of patients care between health providers."

Clear and complete documentation

Another benefit of clinical pathway perceived by the subjects of the experimental group was clear and complete documentation. The researcher selected the following comments for clear and complete documentation.

> "Preoperative and postoperative orders were written very nicely and diagnostic tests were mentioned on clinical pathway."

Increased communication

Another benefit of clinical pathway perceived by the subjects of the experimental group was increased communication. The researcher selected the following comments for increase communication.

> **"**Clinical pathway has increased communication among health team members."

Patient education

Another benefit of clinical pathway perceived by the subjects of the experimental group was patient education. The researcher selected the following comments for patient education.

> "Due to clinical pathway availability they were able to provide timely education to the patients and families regarding all aspects of care."
>
> **"**On times when they missed to educate patients, clinical pathway review used to remind them regarding this factor."

Decreased length of stay

Another benefit of clinical pathway perceived by the subjects of experimental group was decreased length of stay. The researcher selected the following comments for decreased length of stay.

> "Clinical pathway has reduced delays as all aspects of care are documented."
>
> "Clinical pathway has allowed health team members to complete patient care tasks on time."

> **"**As health team members have already decided that length of stay will be five days therefore, all members worked hard to meet this criterion."

Increased patient satisfaction

The final benefit of clinical pathway perceived by the subjects of the experimental group was increased patient satisfaction. The researcher selected the following comments for increase patient satisfaction.

> "Clinical pathway implementation has increased patient satisfaction as it has decreased confusion among health team members."

> **"**Clinical pathway provides knowledge about further plan of patient care."

> **"**Patient's become more satisfy when all aspects of patient care are timely communicated with them."

Physicians involvement in clinical pathway

Beside all the above benefits expressed by nursing staff, the one negative point expressed was that physicians require constant reminders to sign the clinical pathways. The researcher selected following comments for physician involvement in clinical pathway.

> "Nurses complete every step of clinical pathway but physician requires reminder to sign the pathway."

> **"**Physicians need more training regarding clinical pathways in order to make them more self directed and involved in this process."

STAFF COMMENTS ON CLINICAL PATHWAY IMPLEMENTATION

Question 17 called for subjects to discuss their reactions, positive and negative, to implementation of clinical pathway intervention. It was anticipated that this question would generate a broad critique of clinical pathway intervention and would also provide a unique insight into the subjective experience of staff who delivered care using the clinical pathway.

A recurring positive comment across the interview data for question 17 was transparency in well-written orders, and that the clinical pathway acted like a framework for all caregivers to guide, coach, and mentor staff on all aspects of patient care. Other comments emerging from analysis of the responses to this question were to do with the excitement associated with integrated documentation, the high level of outcomes, and the independence in the caregiver.

Transparency in well-written orders

Staff subjects demonstrated a positive reaction toward clinical pathway implementation. They were amazed by the user-friendly version, as they felt there was transparency in written orders of the physicians. The researcher selected the following comments as representative of concept of transparency in well-written orders.

> "Clinical pathway consists of clear and concise written orders by physicians, which saves maximum nursing time."
>
> **"**Clinical pathway acts like a framework, which provides continuous guidance regarding management of TURP patients."
>
> **"**Clinical pathway consists of well-documented orders regarding diet, activity and some other areas of patient care."

Case managers' role in clinical pathways

The researcher selected the following comments as representative of the concept of the role of case managers in clinical pathways:

> "Well, I actually really like the role of case managers in successful completion of clinical pathways."
>
> "Role of case manager is found to be a very helpful role for providing continuous guidance regarding clinical pathway. Furthermore, the interaction among team has increased."

Question 18, the final question of the staff satisfaction survey, was offered to the subjects of both groups as it invited subjects to make any additional comments relating to any aspect of patient care. This item was included to make provision for subjects to contribute information they felt to be important to the present investigation. This question was also intended to elicit information not covered in the other questions. The concepts emerging from the staff satisfaction survey comments were different in each group. First the comments of the control group will be described, followed by the comments of the experimental group.

Comments from the control group mostly related to staff burnout, an issue which they shared to lower their anxiety. The researcher selected the following comments of the control group.

Knowledge deficit

Many control group subjects reported having fewer educational opportunities; therefore, they had a knowledge deficit about the subject of TURP, as is evident from following comments.

> "Staff requires more education about catheter care. Staff should be taught regarding bladder irrigation."
>
> "In my opinion, some in-service sessions to be arranged for staff in order to enhance their knowledge regarding TURP."
>
> "There is a need to give more information to all registered nurses about TURP so they can educate patients and provide them correct information."
>
> "I have no knowledge for TURP. Clinical nurse teacher should conduct the sessions on disease process of TURP."
>
> "I have information only regarding pre and postoperative management of TURP, but not know more than that. I need complete information about disease process and surgical treatment."

> "Do case presentation on TURP. That should cover brief history of patient along with knowledge regarding disease process and should outline reasons of bladder irrigation."

Non-availability of educational material

Another important comment that emerged through analysis of the staff satisfaction survey from the control group was the non-availability of educational pamphlets and booklets for patient education. Several subjects commented that they had concerns about their knowledge deficit on disease process, and non-availability of educational material further prevented them from educating patients. The following comments typify the discussion.

> "Some video should be prepared for patient education and some booklets to be available for patient's self reading."

> "I can only impart the education if I have knowledge or the teaching pamphlets are available for patients and staff."

Absence of guidelines

The third theme that emerged from the comments of control group subjects was the absence of guidelines for patient care, as the following interview excerpts illustrate.

> "There is a great need to have systematic guidelines available for care of TURP patients, as these will allow meeting the needs of the patients with great efficiency."

> "I am working as clinical nurse teacher on the surgical unit since three to four years. In my opinion nursing staff are not knowledgeable to provide quality care to the patients. If any guidelines / protocols or pathway is available, it will allow staff to follow all aspects of patient care and will enhance multidisciplinary collaboration."

> **"**Our unit staff changes a lot and we do have many types of surgical patients such as general surgery, ophthalmology, urology and others all on the same unit. If guidelines are available, we can provide good care otherwise we are confused."

Lack of communication and coordination

Some of the study subjects commented that there is lack of coordination among care providers. The researcher selected the following comments.

> "We get over burden due to lack of communication and coordination among us. We have to chase physicians to write the orders for patients. This activity consumes most of our time."

> "Health team members must develop good communication. The matters regarding care are discussed with patients such as catheter will be removed in the afternoon but this information is neither documented and nor communicated, which leads great problem in care and makes patients anxious and aggressive."

The comments provided by the subjects of the experimental group were very different from the comments of the control group. Therefore, different concepts emerged from these comments. Most of the comments were regarding critique on the improvement and refining of clinical pathway.

Improvement in format and content

More than half of the interview subjects commenced their descriptions on the nature of the contents and formats of clinical pathways. It was clear across the interviews that the subjects considered the role of clinical pathway in patients care to be very effective and important. Suggestions were given to further refine the pathway. The following survey comments were selected by the researcher as representative of the discussion on the content of clinical pathway:

> "It is good to have all documents on one place, means flow sheet, irrigation and all forms on one place, but post-op orders sheet needs to be attached and nursing and physician orders sheet should be separated."
> "There is a need to place additional physician order sheet in clinical pathway, as history papers are more than physical examination forms and physician orders".

> "Clinical pathway must include surgical procedure note, as this is very important document for continuum of care."

Lack of initiative by clinic staff

Comments from the experimental group subjects raised concerns about the role of clinic staff in the implementation of the clinical pathway. They showed concern regarding the lack of initiative by clinic staff in attaching clinical pathway to the patient's file. The researcher includes the following survey comments as representative of this issue.

> "Sometime clinical pathway is not attached from clinic, so it gives lot of problem to inpatient staff."
>
> "Clinical pathway itself is good, if multidisciplinary team members utilize them properly. If they are not initiated from Urology clinic, then they disturb the whole process and it increases the work for inpatient staff."

Staff education

A theme that was clearly evident across all interviews was staff education. The following interview excerpts have been selected by the researcher as being representative of the theme on staff education.

> "Rapid change of staff due to turnover decreases effectiveness of clinical pathway, therefore continuous sessions on monthly basis to be conducted with all staff to make them knowledgeable."
>
> "If we want to make clinical pathways effective then nurses, doctors and other all new staff should be trained on the regular basis, if staff are not knowledgeable then clinical pathway will not improve core deficiencies in the system."
>
> "Clinical pathways are effective and well organized but benefits can only be achieved by staff education."
>
> "Staff education should also include what to be done if complications occur such as if color of urine becomes red on postoperative stage and some other complications."

CUMULATIVE ANALYSIS OF STAFF SATISFACTION SURVEY

After computing the analysis of each question of the staff satisfaction survey, it was also necessary to compute the cumulative score for staff satisfaction. As illustrated in Table 24, the mean results showed that there was significant difference in the staff satisfaction

of the two groups. The subjects of the experimental group were found to be more satisfied compared to subjects in the control group, indicating that clinical pathway intervention significantly improved staff satisfaction.

Table 24
Overall staff satisfaction survey analysis

	N	Mean Score	SD	t test	Significance (2 tailed)
Control	28	31.43	4.74		
Experimental	37	34.27	3.36	-2.830	.006*

- = significant

SUMMARY

The results presented in this chapter constitute the findings of the current investigation conducted at AKUH, Pakistan. The overall objectives for this chapter were, firstly, to present demographic data to describe the key characteristics of the population, and secondly, to present the findings as they related to the study variables.

The current investigation found that clinical pathways are an effective intervention to improve outcomes in patient care. The findings show significant difference in the results of objective one, where clinical pathway improved variances relating to pre-admission, physician, nursing, and some of the discharge-related variances.

Study findings are also significant for objective two, which stated that clinical pathways improve clinical quality. In clinical indicator monitoring there was a

significant difference in the occurrence of post-operative problems, such as electrolyte imbalance, constipation, phlebitis, and the post-operative complication of UTI. The subjects in the experimental group had fewer occurrences of post-operative problems and post-operative complications compared to subjects in the control group. However, no significant difference was found in hospital mortality rates, re-hospitalization within 30 days, or intravenous antibiotic administration for more than two days during the post-operative period.

Objective three, which related to the measurement of financial variances and length of stay, showed no significant difference. The results indicated that the clinical pathway for TURP had no impact on length of stay and financial variances.

Objective four related to the measurement of patient satisfaction in the two groups. A statistically significant difference was found in the overall patient satisfaction index across the two groups. The subjects of the experimental group were more satisfied than the subjects of the control group, indicating that the clinical pathway intervention impacted positively on patient satisfaction.

Objective five related to the measurement of staff satisfaction in both groups. There was a statistically significant difference in satisfaction of the two groups, indicating that clinical pathway intervention improved staff satisfaction.

This study produced a considerable amount of useful data that will contribute to a deeper understanding of the impact of clinical pathways on improvements in clinical quality, and patient and staff satisfaction. The following chapter of the thesis considers the discussion, conclusion and recommendations regarding the study findings.

CHAPTER SIX
DISCUSSION

Introduction

This chapter commences with a reflection on the aims of the investigation, and the means by which they were achieved. The limitations of the study are then identified to bring to light the constraints that must be considered when evaluating this investigation's success in meeting its goals. The chapter then proceeds to recall and discuss the significance of the main findings in the light of existing literature.

Beanland, Schneider, Wood, and Haber (1999) stated that the discussion section should interpret the data, gaps, and limitations of the study, its conclusions, as well as giving recommendations for further research. Drawing these aspects into the study should give the reader a sense of how the findings relate to the theoretical framework or knowledge base. Statements reflecting the underlying theory or existing knowledge are necessary, whether or not the aims of the study were supported.

The aim of this discussion is to bring together the findings from each section of the investigation into a meaningful whole that addresses the fundamental research question, "Does clinical pathway improve current practices?" The findings of the study are discussed according to the sections that were outlined in Figure 4. King's conceptual model, which has been applied in theory, is discussed as an important factor, in order to show the relationship between King's framework and the framework of the current investigation.

Aims of the Investigation Revisited

The prime aim of this investigation was to examine the impact of clinical pathway intervention for patients undergoing TURP at AKUH, against the benefits reported by the literature in the western health care systems. Within this broad aim there are two more specific aims. These are:

To improve multidisciplinary collaboration among health team members, streamline documentation by integrating medical and nursing documentation, and enhance consistency, continuity, and coordination of care activities. The processes involved in developing and implementing clinical pathway at AKUH were hypothesized to achieve this aim. The integrated clinical pathway will develop into a powerful audit tool, as all aspects of the process and outcome will be consistently monitored.

To develop a Clinical Quality (CQ) model which can be implemented and subsequently evaluated in clinical practice settings, initially throughout AKUH, but with the potential to extend the clinical model to other hospitals in Pakistan. This aim will be assessed following the completion of the thesis, and will depend on the dissemination of the data to key stakeholders via published papers and conference presentations.

The first aim has been reviewed in the results chapter, and will be reviewed further in this chapter. The second aim of the study was achieved during the data collection phase when the integrated clinical pathway was introduced as an intervention to the experimental group of the current investigation. The third aim is brought to a conclusion in the concluding chapter, where implications and recommendations for practice in the field as well as for further research in this area are drawn out.

Limitations of the Study

It is essential to the integrity of critical research that the researcher engages in a process of critique of all aspects of the investigation, highlighting limitations and errors and considering ways in which the research could have been improved. With hindsight, the researcher was able to reflect on the course of the investigation and identify several areas that could have been improved.

SCOPE OF STUDY

The first and most obvious limitation of the study was its restricted scope. Clinical pathway is a multidisciplinary practice and can be applied to all specialty areas in the health field areas. Clinical pathways are considered to be more successful in surgical procedures than in medical, pediatric, or other specialty areas. A complete, and ideal, view of the application of clinical pathways in all clinical settings would have incorporated the perspectives of all disciplines involved. However, constraints, such as time, budget, and the size of the project, as well as the researcher's involvement, caused the researcher to narrow the scope of the study to one disease and one discipline.

RESEARCH RELATED LITERATURE

In the current study, clinical pathways have been broadly defined by a number of researchers, who described the benefits of clinical pathways with an emphasis on reduction in length of stay and in cost of hospitalization (Bankhead, 1996; Browne, et. al, 2001; Calhoun, 2000; Chang, et. al, 1999; Healy, 2002; & John, 2003). There is little doubt that the studies related to clinical pathways must extend beyond monitoring of cost and length of stay, which are the normal foci of investigations, and should broaden their scope to include other benefits of clinical pathways. Research related literature should also extend to measure clinical quality, and patient and staff satisfaction associated with the implementation of clinical pathways. The domain of research

restricted to length of stay and cost of hospitalization has the potential to miss equally important areas of clinical quality and consumer satisfaction, which may compromise cost reduction with quality. This may also evoke a sympathetic response from hospital and nursing administrators if management implements clinical pathways as a way of promoting health care at lower costs, and increasing patient volume without looking at quality.

It was also demonstrated in the research related literature that clinical pathways have been developed mainly for surgical procedures and in areas where length of stay can be predicted easily so as to evaluate outcomes faster. Zevola (1997) stated that clinical pathways are more easily applied to patients in surgical diagnostic related groups because they are a more predictable population than patients in medical diagnostic related groups. However, it is imperative that studies relating to clinical pathways must extend to other disciplines. They must include the clinical disciplines of medicine, psychiatry, and pediatrics, and include those disciplines and clinical problems where the majority of high volume diseases exist. Failure to apply the concept of clinical pathways in these areas will cause professional discomfort to health care professionals, who will be treating some patients using integrated pathways, and other patients using traditional methods of documentation and interventions. This will lead to greater inconsistencies in clinical practice and patient care management.

INSTRUMENT VALIDITY

One of the problems encountered in the present investigation was the lack of pre-existing survey tools for data collection. As described in the methodology section, data collection tools were of the following different types: variance tracking instrument, clinical indicator monitoring instrument, instruments for monitoring of finances and charges, clinical pathway of TURP as a study intervention for the experimental group,

patient satisfaction survey questionnaire for control and experimental groups, and staff satisfaction survey questionnaire for the control and experimental group. The researcher developed these tools from ground level so that the requirements of data collection and measurement in the present investigation could be met.

The instrument development component of this study was a complex process, as essentially the researcher encountered a blank canvas in terms of previous work on the topic, and was then confronted by the decision of where to start. The variance tracking instrument, clinical indicator monitoring instrument, instruments for monitoring of financial variances, and staff satisfaction instrument were unavailable. Without previous examples to compare the instruments to, or other footprints in terms of which areas of the topic to peruse, the researcher was confronted with numerous challenges. These instruments require testing by other researchers with the same type of study settings and study population.

SURVEY SAMPLE

Selecting the sample for the survey phase of the investigation has been discussed in detail in the chapter on methodology. There is some doubt that the limitation in obtaining a convenient sample according to the selection criteria would have the potential to threaten the internal and external validity of the investigation.

FORMULATING ACTIONS FOR IDENTIFIED VARIANCES

The final limitation of the study was its inability to formulate actions for identified variances. Diane (2001) stated that pathway working groups should be responsible for reviewing and analysis of data, modifying practices, and implementing changes so that the next round of variance and outcome analysis captures the impact of new practices. The clinicians and clinical pathway development team are ultimately responsible for determining whether variance analysis data would indicate if changes were needed in a

clinical pathway, or if any change in the system were required. This use of evidence allows the team to plan the best possible treatment for patients. Furthermore, the regular analysis of the care processes, practices and outcomes through the analysis of variances and feedback of the team is a vital component of the entire clinical pathway program. The study did not include a component in the design where the results of variances could be shared with all stakeholders, particularly physicians and nurses, and practices could be modified to further improve them. This approach was omitted to prevent the occurrences of biases by researcher.

Transitional Period

The transition period from traditional practice to pathway utilization was a challenge for all staff. Several teething problems were faced and managed during this period. In spite of the teaching sessions, staff faced several problems in completing the clinical pathway contents in actual practice. They found it time-consuming, and several repetitions occurred, particularly in documentation. However, continuous education sessions, close supervision, and guidance by the case manager resolved these problems. The case manager and supervisor continuously provided psychological support to staff, and also ensured that all documentation formats were appropriately completed.

Data Collection

Considering the size of the project and the number of variables required to be measured, the data collection plan was thoroughly outlined, and all suggestions outlined during pilot phase of study were rigorously followed to ensure proper collection, recording and storing of data. The researcher and data collector met every day to ensure all entries of data were completed and computed properly. The researcher also had an ongoing dialogue with unit staff to explore any ambiguities in design and content of the clinical

pathway. The researcher considered that this follow-up and dialogue with the staff was not only a strategy to ensure the successful implementation of the pathway, but was also another opportunity to engage in collegial dialogue on utilization of clinical pathway in clinical practice.

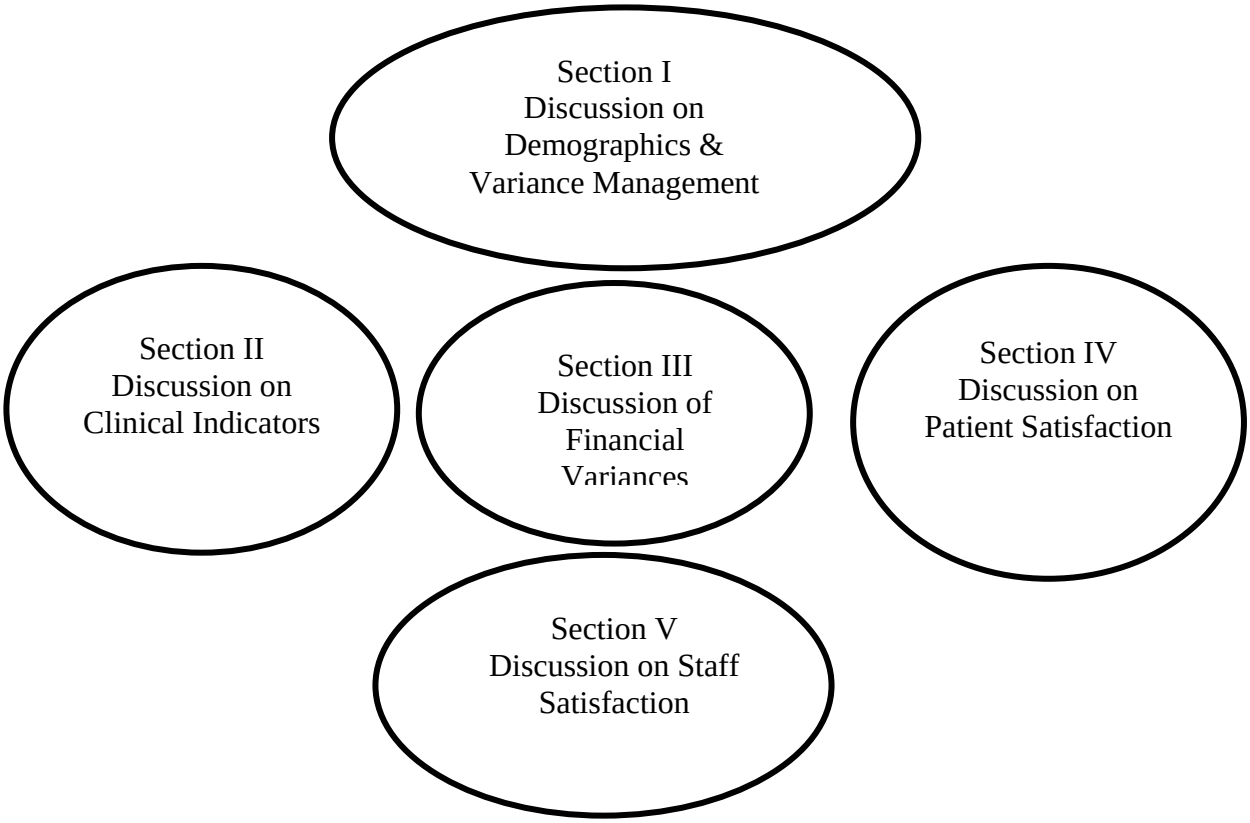
MAINTAINING CONSISTENCY

Burns and Grove (1999) stated that the key to accurate data collection in any study is consistency. Consistency involves maintaining the data collection pattern for each collection event as it was developed in the research plan. A good plan will facilitate consistency and maintain the validity of the study. However, developing a consistent plan is easier than implementing it. Deviations, though minor, need to be noted and evaluated for their impact on the interpretation of the findings. When data collectors are used in a study, they need to be trained to note deviations during the data collation process.

Research Findings

The following discussion paints a portrait of the impact of TURP clinical pathway intervention on the various outcomes described in the study objectives. This discussion been developed through the process of comparing and critiquing the findings attained through the current investigation. The discussion on these research findings is described in the same sequence as the findings were presented in the Chapter Five. Figure 5 indicates this sequence of the discussion on study findings.

Figure 5 Sequence of discussion of study findings



Section One: Demographics and Variances

DEMOGRAPHICS

The total sample of 200 study subjects consisted of patients who were admitted to the AKUH for the surgical intervention of TURP. The subjects of the control and experimental groups who satisfied the inclusion criteria were recruited.

The mean age of subjects was 66.4 years; a recent study of the aging population found a 51% clinical incidence of benign prostatic hyperplasia (BPH) in Pakistani men aged 60–69 years (Narayan, 1995). BPH has been known for several centuries to be a cause of urinary dysfunction. It was mentioned in the Egyptian papyri as early as 1500 B.C., and was discussed by Hippocrates 1000 years later (Narayan, 1995). BPH affects approximately 50% of men aged 60 years and over, and some estimates place the

incidence at approximately 80% (Wein, 1990). BPH is a common surgical problem, with epidemiological evidence of 88% of men over 80 years of age having anatomical BPH, and 51% of men aged 60–69 years showing clinical evidence. Therefore the age of subjects in the current study is the same as per literature available at national and international level. The majority of subjects were from Karachi, as AKUH is located there, and is easily accessible to the city's population. Fareed (2002) also discovered that 85% of the patient population who access AKUH services originate from Karachi.

The study identified that 75% of subjects were retired or unemployed. The common age for retirement in Pakistan is 60 years; very few people work after this age, unless they are need the money to take care of their families, or want to keep themselves engaged with work.

OUTCOMES AND VARIANCES

An analysis of the outcomes and variances was conducted with the aim of understanding variations in the care delivery process and determining the need to revise the pathway to meet the needs of the majority of the patient population. Another objective for outcome and variance analysis was to develop a hospital-wide standardized approach for the evaluation of clinical pathways. Variance monitoring can take place either concurrently or retrospectively through the review of current medical records. In this study, variances were monitored concurrently as they occurred, and the data collector ensured accuracy in the recording of variances by directly computing them in the SPSS 10.0 version on data collection instruments. Cheah (2000) has supported this strategy of prospective variance monitoring. He stated that the prospective variance collection method provides a mechanism of addressing the problems encountered in the care delivery process as it occurs, and as such a more proactive approach to managing variance can be established. The following section

describes the relationship in quality improvement in different types of variances due to clinical pathway intervention. These variances were of six types: pre-admission, patient, physician, nursing, hospital and discharge related. The variances were calculated for both control and experimental groups to measure the impact of clinical pathways.

Pre-admission variances

The pre-admission variances were of four types: waiting time at admission office, waiting time at nursing station, utilization of pre-anesthesia clinic, and pre-op teaching conducted in the urology clinic. As discussed in the data analysis section, the chi-square and t test results showed significant improvement in pre-admission variances due to clinical pathway intervention.

The very impressive finding in this area was that pre-operative teaching conducted by nurses in the urology clinics was significant. The pre-operative teaching conducted by nurses in the ambulatory area was the first key to quality improvement. Well-prepared patients were found to be cooperative at all stages of treatment and care. King (1981) stated that the overall goal of nursing is to assist individuals to function in their roles. The nursing staff of the ambulatory clinic formed an interpersonal system with TURP patients. By using the transaction process, they assessed the educational needs of patients and imparted the knowledge to patients, enabling them to have smooth recovery from their current disease.

Furthermore, in pre-admission variances, the utilization of the pre-anesthesia clinic also showed a significant difference between pathway and non-pathway groups. The major benefit for the former was that the patients were assessed and prepared for TURP surgery during their visit to ambulatory services, whereas in the non-pathway group, patients were admitted a day before to have assessment by anesthetist. The pre-anesthesia clinic was introduced at AKUH in 1994 to improve work processes and

decrease the length of stay. Pre-anesthesia clinic utilization is measured as an indicator by ambulatory clinic staff. The overall utilization for surgical services is 50%. In the control group, the pre-anesthesia clinic utilization for TURP surgical patients was only 8%, whereas in the experimental group, clinical pathway intervention improved its utilization from 8% to 84%. This was a significant improvement in core processes at the pre-admission phase, which allowed patients to be adequately prepared in ambulatory areas as well as to reduce their length of stay by one day.

Patient related variances

Considering the age group for TURP surgical intervention, it was necessary to measure patient related variances. Among patient related variances were if the patient was suffering from such conditions as cardiac problems, hypertension, diabetes, anemia, or urinary tract infection (UTI), or if they had undergone any other surgery on the same day they had TURP. No significant difference was obtained in the occurrence of cardiac problems and hypertension among the control and experimental groups, indicating that patients in two groups were the same with respect to these co-morbidities. However, results show a significant difference in the occurrence of diabetes and UTI. The experimental group had fewer occurrences of such problems. In spite of that, there was no significant difference in the overall general health of both groups. None of the subjects were excluded from the study due to general health factors, as 94% of the subjects had either good or satisfactory health and the surgical and anesthetist team confirmed them to be fit for surgical intervention of TURP.

The analysis of patient related variances identified that, although there was no statistically significant difference in the two groups related to occurrences of core morbidities, there was a clinically significant difference in patient related variances. Among the 200 study subjects, 181 co-morbidities were identified, indicating that

hypertension, cardiac problems and diabetes are common health problems among the Pakistani population. These study findings have been supported by the Pakistan Medical Research Council report (PMRC, 1998), which has stated that hypertension affects one out of every three persons over 45 years. Circulatory diseases are emerging rapidly as a major public health concern in countries such as Pakistan, where they cause over 100,000 deaths a year (12% of all deaths). Furthermore, diabetes Type 2 affects about one in ten women in cities; approximately 2.7 million people in Pakistan may have the disease, yet only 0.8 million have been diagnosed. The Pakistan Medical Research Council report also noted that individuals with diabetes Type 2 face not only a short life span, but also have a probability of incurring acute and chronic complications. There is a global projected rise in the incidence of diabetes Type 2 and related conditions from 135 million to almost 300 million by the year 2005, due to unhealthy diet, obesity, and sedentary lifestyle. In 1992, around 11,000 Pakistani's died from diabetes and related conditions.

Patient related variances also included variance monitoring of subjects who had other surgery on the same day they underwent TURP. On some occasions, it saves cost and time to have one or two surgeries conducted on the same day. However, it may also lead to risk factors and prolong hospitalization. The study findings were significant, indicating that the subjects in the experimental group had fewer surgeries on the same day compared to the subjects in the control group. The clinical pathway of TURP was designed solely for TURP patients; patients undergoing additional procedures were only included in the experimental phase if the post-operative care required for these additional procedures was similar to that of TURP. This was done to reduce confusion among staff regarding safe delivery of clinical practices. The common surgeries that subjects in the control group underwent along with TURP surgery were

vesicolithotomy, prostectomy, urethral dilation, cystourethroscopy, inguinal hernia repair, meatotomy, cystolithoplexy, laryngectomy, and trachestomy. In the experimental group, the two common surgeries that subjects underwent were inguinal hernia and cystolithoplexy, as these surgeries had similar post-operative management as TURP and they did not require any extra administration of antibiotics, other medications, diagnostic intervention or post-operative education. Furthermore, the duration of hospitalization/length of stay was also the same and was kept within five days. Altogether, 91% of study subjects had some type of other surgery on the same day. The literature review failed to identify any report on the occurrence of this variable in western hospitals.

Physician related variances

The physician related variances were delay in consultation, delay in evaluation, appropriate written physician orders, discussion of plan of care with patients by physicians, delay in investigation of orders written by physicians, delay in follow-up, and delay in education by physicians to patients. The results of these variances indicated that there is considerable variation between the two groups. Findings of the study were supportive that clinical pathway intervention showed significant variation between physician related variances in the control and experimental groups. Subjects in the experimental group followed processes due to availability of clinical pathway of TURP surgical intervention. The current investigation findings were comparatively similar to the findings of Irenson (1997), who stated that clinical pathways reduce practice variation, minimize delays in treatment, and improve resource utilization.

The data analysis revealed that, in physician related variances, the major area of concern was that the plan of care was not discussed with patients and their family members. In the control group of the current study it was found that physicians failed to

discuss the plan of care with seventy-three (73%) of the subjects. However, all columns of the plan of care were very well outlined on the clinical pathway, allowing physicians to discuss care plan details, such as oral fluids, perineal care exercises, and deep breathing exercises, with patients and families on a day-to-day basis as stated in clinical pathway. This meant that 88% of the subjects in the experimental group received timely discussion with the physician concerning their plan of care.

In the control group, physicians wrote a lot of inappropriate orders, and, in some cases, forgot to write orders at all regarding diet and other areas of patient care. For example, in 75% of cases, post-operative analgesia (e.g., pethidine injection) was not entered in Patient Order Entry (POE) system; intravenous fluid infusion orders were not reviewed for 24 hours; and post-operative orders were not written. Furthermore, physicians were not writing the orders regarding discontinuation of Foley's catheter, lung care, patient's activity, and steam inhalation. The inappropriate orders also included initiating intravenous infusions when not required; no order to initiate intravenous infusion when patient was Nothing Per Oral (NPO) for 12–13 hours; time and frequency of analgesia not mentioned; and inappropriate activity orders for post-operative patients with spinal anesthesia, such as full activity for patients with spinal anesthesia, and restricted activity to Complete Bed Rest (CBR) for 24 hours for general anesthesia (GA) patients.

Study findings also revealed that there was a lack of coordination between consultants and residents, and that they were not discussing the patient's plan of care with each other, resulting in variations in physician orders among physicians. In 15% of subjects, the consultant documented different time frames for discontinuation of catheter in the resident's documentation. Finally, low salt diet orders were not mentioned for cardiac patients. Clinical pathway intervention had all the columns of

required intervention, therefore physicians were not required to write any orders, as all physician orders were pre-printed as part of the clinical pathway format. This strategy significantly reduced inappropriate and incomplete written orders by physicians.

The findings of this study support the findings of Cardozo (2000). He stated that the use of a clinical pathway for patients with congestive heart failure improved the physician directed processes of care, such as more effective use of diuretics, better utilization of echocardiography, and a rise in heparin prescription rates for deep vein thrombosis as prophylaxis. Cheah (2000), in his study, measured diagnostic accuracy in an emergency department as clinician variance, and found that the clinical pathway implemented in the emergency department of an acute care general hospital significantly improved the diagnostic accuracy by 92%. Furthermore, the clinical pathway served as a useful educational tool for resident doctors.

Hospital related variances

Variances monitored in this category related to equipment availability; delays in investigation results; problems in patient care with support services; cancellation rates; and no show rates. The chi-square results showed no significant differences in the hospital-related variances, indicating that hospital systems were very smooth and comfortable, and allowed patients in the control and experimental groups to have a positive hospitalization stay. However, in the comments and suggestions section of the patient satisfaction survey, patients did have some common problems with support services, such as spicy food and beef given to patients with gastritis, higher than expected bills, chest physiotherapy not performed on two occasions; and the failure of a dietitian to explain diet plan with patient. The study findings of cancellation and no show rates were not significant, as the rates among both groups were same; the overall cancellation rate was 8% for TURP surgery and the no show rate was also 8%. These

results are considered high compared to the overall rates monitored for these two indicators by the department of surgery. The cumulative cancellation rate for the year 2002 was 4.48%, and 3.6% for the first quarter of 2003; the no show rate for 2002 was 9.13%, and 7.6% for the first quarter of 2003. Comparison of these rates with international benchmarks and hospital trends have identified that cancellation and no show rates for TURP procedure at AKUH are comparatively high; therefore, this area requires further refinement.

Nursing related variances

The other most important types of variances were nursing related variances. Six types of variances were assessed in this category: complete documentation by nurses on all aspects of patient care during hospitalization of patient; discussion of plan of care with patients and families by nurses; appropriate assessment on patient, notification to physician by nurses about patient's condition when required; carrying out physician orders; and delay in patient education by nurses.

The review of analysis of these variances in the control group indicates that nurses in these areas did not perform all required tasks. For example, appropriate assessment by nurses was conducted on only 9 subjects in the control group, 73 subjects did not have their physician's orders completely carried out; and education and explanation by nurses was delayed for 94 subjects in the control group. This shows that nursing related variances were many, indicating poor quality in patient care; however, the intervention of clinical pathway was able to overcome such problems. The chi-square results of these variances show a significant difference between both groups, indicating that clinical pathway improved core processes in nursing care. Husting (1997) stated that King's theory allows the nurse delivering care to break through a tendency towards task orientation and focus on the dynamics and the interaction that

takes place between caregiver and family. Similarly, clinical pathway intervention improved patient/family interactions.

The findings of the current investigation indicate that clinical pathway intervention introduced in the experimental group improved the core processes of patient care, and allowed nursing staff to focus on important nursing functions in the delivery of patient care. According to King's framework, clinical pathways improve nursing related variances as they allow nurses to use critical thinking process in their professional practice. King (1999) stated that critical thinking reflects the highly developed thinking skills essential for nursing practice in the twenty-first century.

Many times health team members perform their clinical tasks but forget to communicate progress of patient care to patients and families, and also fail to discuss with them the plan of their care. This has the potential to increase anxiety in patients as well as families. The data analysis of the control group shows that only eight patients had their plan of care discussed. However, it was identified that clinical pathway intervention significantly improved this aspect of care. King (1981) has emphasized the importance of communication in her conceptual framework and theory of goal attainment, considering it an important part of human interaction which forms interpersonal systems.

Nursing documentation has a central role in the quality of care. To meet standards of practice at an excellent level, and to meet regulatory requirements, it is important to provide efficient systems and tools to nurses in order to achieve excellent documentation without compromising care. Clinical pathway in the current investigation was able to achieve this purpose. The most outstanding feature of nursing related variances was that in the control group, nursing documentation was found to be complete in all or some of the aspects of care in all 100 subjects. The major deficiencies

in nursing documentation related to medication administration. Several medication orders such as pethidine injections, Medazolam tablets, and four-hourly charting of nebulizer administration were not entered on medication administration record. The other aspects of nursing care which were missing in the nursing documentation were notes sent to and received from the operating room; one-hourly blood sugar charting; any aspects of care refused by patients not documented with rationales; and documentation of certain treatments, such as steam inhalation, change of intravenous cannula and blood clots removal by physicians during irrigation process. The clinical pathway intervention significantly improved nursing documentation.

Related to the study findings regarding nursing documentation, the author contends that nurses must report problems that they are facing in their work processes. If nurses perceive that nursing documentation is to be concise, they must make a formal report in anticipation that they will receive support. Therefore, the finding that there is a positive relationship between improvement in nursing documentation, if it is integrated and concise, has an important implication for the nursing profession.

Nursing plays a vital role in patient education. Current Study have found a significant improvement in patient education due to clinical pathway intervention. In addition, an education booklet was prepared as a part of clinical pathway implementation to ensure consistency in patient education. Turner (1995) and De Jong (1995) supported the concept that educational booklets help patients become aware of the expectations for each day of their hospitalization, thus reducing anxiety associated with illness and hospitalization. Moody's (2001) finding also supported this. In his study, an action framework was utilized to introduce a clinical pathway for women undergoing caesarian section at Westmead Hospital, in Australia. He found that clinical pathway itself became a document that facilitated the education of women, improving

their preparation for discharge and it also added to the orientation and skills of new staff. Cardozo (2000) also supports the concept. In his study on implementation of clinical pathway for patients with congestive heart failure patients, he discovered that there was a significant improvement in providing patients with basic education on congestive heart failure. He noted that the clinical pathway group achieved a significant improvement in a number of nursing processes, such as daily weight recording, early discharge planning, patient mobilization within two days of admission, and provision of basic education to patients with congestive heart failure.

Results show that there is a need to replace traditional nursing practices with the clinical pathway model, and to modify the prevailing nursing culture which militates against identifying the benefits of clinical pathways. A failure to do so will negatively impact on health care outcomes of patients, particularly while nursing numbers are decreasing. Khowaja and Nensey (1999), in their explorative descriptive study, determined that the turnover rate of nursing staff at AKUH in 1996, 1997, and 1998 was 21–25%. Khowaja, Merchant, and Hirani (2002) discovered that out of 445 nurses employed in a major hospital in Karachi and involved in direct patient care, 62% (276) had less than two years of experience, 17.5% (78) had two to four years of experience, 7.4% (33) had four to six years of experience, 5.2% (23) had six to eight years of experience, 2.5% (11) had eight to ten years of experience, and 5.4% (24) had more than ten years of experience. The number of nurses hired in 2002 was 111, and the number of nurses who resigned was 123, with an overall turnover rate of 26%, which is quite high compared to the international nurse turnover rate of 15% (Health Care Advisory Board, 2001). Therefore, there is a great need to replace traditional practice with the clinical pathway model to ensure that nurses can deliver patient care for a

specific disease pattern in a safe and competent manner in line with international standards.

Discharge related variances

The final part of variance monitoring was variances related to discharge of patients. Six types of variances were monitored in this category; namely, discharge delay due to delivery of medication; timely documentation of discharge notes by nurses; time of discharge orders written by physicians; time of discharge procedure; time patient left hospital (time patient left the nursing unit after completion of discharge procedure); and discharge delays due to family reasons after completion of discharge procedure.

Results show that there was no significant difference between the two groups in discharge delay due to the delivery of discharge medication, indicating that subjects of both groups received discharge medication on time. The medication delivery system at AKUH is very comprehensive, and timely delivery of medication to nursing units is a service indicator monitored by the pharmacy department. The results of this indicator are reported and shared with the nursing department on a quarterly basis. Physicians enter the medication orders in the computer, called the Physician Order Entry (POE) system, and medication orders are viewed at the same time in pharmacy. The clinical pharmacists are trained to argue and verify all queries related to medications with physicians. The pharmacy porter delivers the discharge medications within 45 minutes of discharge orders to the nursing units. Nursing staff are then responsible for the delivery of medications to patients, and explaining in detail all the required education related to medication administration at home. However a significant difference was found between the two groups in the writing of discharge notes by nurses. The experimental group showed comprehensive writing of discharge notes due to pathway intervention.

Delay in discharge is a chronic problem, and issue of concern, at AKUH, with several quality circles and quality initiative processes failing to reduce discharge delays. The hospital discharge policy (Prot-A P-010) states that all discharge orders written by physicians should give a time frame when writing discharge orders, and that the discharge process should be completed within two hours. However, results show that 65% of subjects' discharge orders did not have a time frame and, therefore, it was difficult to assess the completion of the discharge process. This indicated poor compliance with the hospital discharge policy by physicians. The current investigation has identified this as a major area for improvement for the hospital system.

Discharge policy (Prot-A P-010) also states that patients should leave the hospital by 1600 hours. This policy produces several benefits; first, it vacates hospital beds for new admissions, and, second, patients can safely reach home during daytime. Data analysis showed that 58% patients left hospital by 1600 hours in both study groups. As discussed earlier, discharge delays are a major area of concern for hospital administrators. Monitoring of this indicator over the past three years by the nursing services department has indicated that 45% patients leave the hospital before 1600 hours as per policy, but very little improvement has been observed in spite of several efforts launched by the division of nursing services in collaboration with multidisciplinary teams. The major reasons are that, as patients bills are computed from 12 midnight, awareness of this factor by physicians has encouraged them to enter discharge orders later. Some physician rounds take place in the evening when the acuity level of patients is high; therefore; physicians wait to see if patients are fit before discharge. They also delay discharge until they have viewed the results of laboratory tests sent in the morning. Physician colleagues are of the opinion that sending patients

home after 1600 hours is an early discharge, which benefits the patients by the saving one day off the length of stay, and the institution has an available bed by late evening.

Physicians' attitudes towards the discharge process also prolong the waiting time of patients in the emergency room (ER), leading to congestion of the ER as well as increasing the apprehension of patients and their families. It also places stress on the nursing supervisor, who has to search for available space, and it consumes the time of admission staff at the admission office and the unit receptionists in the nursing units while they receive many calls regarding availability of beds. It also creates tension among nursing staff in nursing units by keeping them busy vacating the beds rather than delivering care to admitted patients. The data collected by the patient business service department on alternate accommodation indicates that 3441 (10.4%) patients from the total admission in 2002 were accommodated in different places due to non-availability of space in their own location. This also has an impact on how much nursing staff time is invested in transferring these patients back to their required location, nursing time which could have been utilized in improving core processes of patient care. Hospital management, therefore, should examine this, with the aim of overcoming the problem and ensuring that hospital patients be discharged as per policy.

The last variable in discharge related variances was discharge delay due to family reasons, after the discharge process was completed by the hospital. Families of patients are aware that hospital bills are computed at 12 midnight; therefore, they prolong discharge time by waiting for dinner between 7 and 8 pm. Clinical pathway intervention did reduce discharge delays associated with family reasons. Nurses on the surgical units caring for TURP patients ensured that discharge planning began on the patient's admission, and they documented such information in the patient's initial

assessment form and communicated this discharge plan with the patients and their families each day, according to clinical pathway, in order to ensure smooth discharge.

SUMMARY

In conclusion, the discussion in this section established that variances identified in care delivery in the control group were improved due to clinical pathway intervention, thus improving the core process of patient care. Furthermore, clinical pathway intervention was able to achieve the reported benefits related to outcome variances, such as multidisciplinary collaboration; increased interaction among health care teams and open communication; and significantly improved pre-admission, nursing, physician and hospital related variances.

Section Two: Clinical Indicators

This section will discuss the results of the analysis of clinical indicators as described in objective two. These indicators were derived from current evidence relating to TURP to monitor clinical quality and allow the objective evaluation of current care provided to subjects in both groups undergoing TURP. The analysis of clinical indicators is divided into three areas: a) post-operative problems; b) post-operative complications; and, c) other clinical indicators.

POST-OPERATIVE PROBLEMS

The results for all three post-operative problems (electrolyte imbalance, constipation, and phlebitis) indicated significant differences between the control and experimental groups. All three problems were reduced in the experimental group compared to the control group, due to clinical pathway intervention. One of the reasons for fewer occurrences of post-operative problems could be the pre-printed physician orders on clinical pathway. Data analysis of physician related variances identified that in the

control group physicians were writing inappropriate orders, and eliminating these may have reduced the occurrence the post-operative complications. The documentation or printing on clinical pathway of orders or instructions, such as removal of intravenous infusions and encouraging of patients to take extra fluids, a proper diet, and light laxatives, were also timely, and these could be contributing factors for clinical improvement in this area.

King (1999) has shown a relationship between identifying goals, making plans, and implementing actions to achieve them. Similarly, during the design phase of the clinical pathway, the multidisciplinary team developed pre-printed physician orders from evidence-based medical practice. Implementation of these actions allowed the achievement of best practices for TURP patients, by deleting redundancies in clinical practice.

POST-OPERATIVE COMPLICATIONS

Post-operative complications such as the occurrence of UTI related to TURP were significantly reduced in the experimental group due to clinical pathway intervention. The study findings showed no statistical difference in the occurrence of hematuria between the two study groups. Although not statistically significant, this finding was clinically significant as altogether 172 (86%) subjects had post-operative TURP hematuria. Burns and Grove (1999) stated that the clinical significance is related to the practical importance of the findings. As previously discussed, the literature relating to TURP showed hematuria to be a common occurrence in the first 24 hours post-operatively following TURP. Discussion with surgeons supported that subjects in the current investigation had normal hematuria, which was resolved with bladder irrigation within 48 hours. Wilson (1997) supported this study finding by stating that red-tinged urine is common for the first 24 hours.

OTHER CLINICAL INDICATORS

There was no statistically significant difference between the groups in the monitoring of other clinical indicators. Intravenous antibiotic administration after the second day of surgery was the same in the control and experimental groups. This finding was statistically non-significant, but clinically significant, as 81 (40%) subjects were administered antibiotics after the second day of TURP surgery. The literature suggested that antibiotics should not be administered to TURP patients on their third post-operative day. The rationale for this practice is not known; however, the discussion with clinicians identified that patients also had a need to have antibiotics administered on the third day of hospitalization. There is a need to emphasize appropriate utilization of antibiotics in clinical settings. The pharmacy review in 2002 identified that overall antibiotic utilization was very high at the AKUH. The total antibiotic cost was PKR15 million. Novick (2002) stated that 70–80% of antibiotics are unnecessarily prescribed. They are given for conditions ranging from headache to ingrown toenails; they are swallowed, sucked, injected, and smeared; they are painted on cuts, dumped into wounds, fed to the chickens and pigs, and spread on the floors of the hospital wards.

There was no statistically or clinically significant difference identified in the inpatient hospital mortality rate between patients in the control and the experimental groups. None of the patients expired during hospitalization following TURP surgical intervention. Cheah (2000) similarly discovered that no statistically significant difference was found in the mortality rates between pathway (2%) and non-pathway (1.7%) groups. Resnick and Thomson (1998) stated that the operative mortality of TURP has decreased dramatically over the past 30 years, and mortality has fallen from 2.5% to 1.3% to 0.2%. This reduced mortality has occurred despite the fact that the average patient age was 69 years, and that 77% of these patients had one or more co-existing co-morbidities at the time of surgery. Cardozo (2000), in his study on the

implementation of clinical pathway for patients with chronic heart failure, discusses that the mortality rate during hospitalization remained unchanged.

Re-hospitalization rates within 30 days post-discharge, is a common hospital indicator measured for many disease processes in many hospitals. However, so far at AKUH it has not been measured, but was included as a study variable in the section of clinical indicator monitoring. There was no statistically significant difference in re-hospitalization rates between the control and experimental groups. Turner (1995) and De Jong (1995) identified that there were fewer complications, and that the proportion readmitted within three months was 4% for the pathway, against 13% for the control group. Cardozo (2000) also discovered in his study that there was a significant rise in re-admission rates at 31 days, from 9.25% to 13.5%, for the pathway group ($p < .001$).

SUMMARY

The discussion in the previous section has concluded that clinical pathway intervention improved clinical quality, which was evident by a reduction in the occurrence of post-operative problems and post-operative complications. The introduction of the clinical pathway has supported the theory of King, who emphasized that human interactions and transaction allow identification of patient focused goals and development of appropriate plans for them. Similarly clinical pathways prevented the practice of writing inappropriate clinical orders for medications and intravenous infusions, and for some other clinical practices, thus promoting safe practices by care providers.

Section Three: Length of Stay and Financial Variances

The third section of this chapter discusses the findings of length of stay and financial variances, as stated in objective three.

LENGTH OF STAY

The multidisciplinary team decided that the length of stay for TURP surgical intervention should be five days. Seventy-five percent of subjects in both study groups met this criterion of five days. Furthermore, the length of stay further declined from 5.20 in the control group to 4.69 in the experimental group. Though the independent t test and chi-square results showed no significant difference in the length of stay between the two study groups, 75% of subjects still met the set criteria. From these findings, the researcher gained the impression that the length of stay set by the multidisciplinary team was adequate, and the clinical pathway intervention was unable to reduce the length of stay further. Similar findings were discovered by Sukh (2000), who in his study on stroke pathway found that there were 76 patients in each group, with a mean age of 75 years and no difference between groups in outcomes or length of stay, institutional admission, or mortality.

As the findings of the current investigation indicated no significant difference in the reduction of length of stay, this could be related to quality efforts existing at AKUH. The physician group may have calculated length of stay accurately looking at the trends of past practices and at the literature. Members of the multidisciplinary team, particularly the physician, felt that their practices were supported by this finding, and the competency of their surgical management has been confirmed by the findings of the current investigation, particularly in relation to length of stay. The accuracy in surgical management ensured that duration of hospitalization is at minimum level for TURP surgical intervention in order to prevent occurrence of nosocomial infections due to unnecessary hospitalization. The study findings have already demonstrated that there were no increases in re-hospitalization rates, and not a single inpatient had hospital mortality. All these findings support that a quality culture in patient care management does exist at AKUH, and that the surgical team is qualified for patient care

management. However, the extensive literature search related to impact of clinical pathway on length of stay has shown a decline in length of stay related to pathway implementation. Dowsey (1992) found that of the 92 patients in pathway and 71 patients in a control group, who were similar in age, weight and co-morbidities, those who were treated with pathway got out of bed and were ambulant earlier, and were discharged after 7.5 days, rather than 8.6 days in non-pathway group. The details of the literature review regarding decline in length of stay due to clinical pathway utilization has been discussed in Chapter Two.

FINANCIAL VARIANCES

Compared with most businesses, health care organizations are financially complex. Not only do they provide a large number of specific services, their individual services often have different effective price structures. One customer may choose to pay on the basis of cost; whereas another may pay full charges. This variation in payment patterns creates problems in the establishment of prices for products and services. Indeed, the revenue function of a typical health care entity is usually much more complex than that of a comparably sized non-health care business. Yet, although health care organizations may be complex from a financial perspective, they are still businesses. The financial viability of health care organizations is also affected by their physical location; this is particularly true if the health care organization has locations in areas of political and economical change. Numerical variability could only be consistent and non-changeable if such organizations received funds in sufficient amounts to meet their financial requirements for operational budgets so that rising costs are not transferred to patients.

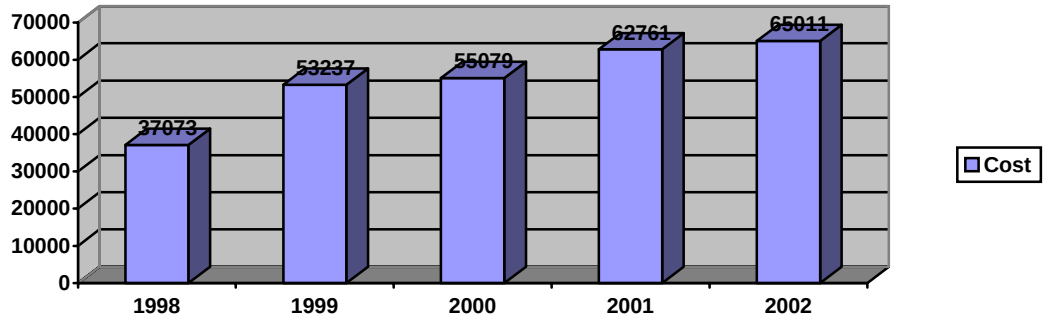
In the current investigation, financial charges to a patient's total bill were broken into nine specific areas, as for the existing system in billing services. They were bed charges, attendant fee, surgical fees, anesthesia charges, special consultation charges,

pharmacy charges, medical/surgical supplies charges, diagnostic charges (laboratory and radiology), operation room charges, and other charges. The results showed that the length of stay was reduced by half a day, but it did not impact on the overall cost of the hospitalization. Differences in the mean cost of treatment in both groups showed no significant difference in the cost of hospitalization.

These findings were different from most of the published literature, which indicated that clinical pathways reduce the length of stay and overall cost of hospitalization; in the current study, in spite of some reduction in length of stay, the cost of care was found to be the same. The mean cost in the control group was PKR60,670, whereas the mean cost in the experimental group was PKR61,484. Although no change was observed in the surgeon's fee, clinical pathway intervention did produce a declining trend in the cost of anesthesia by PKR800, pharmacy by PKR300, medical surgical supplies by PKR1,500, diagnostic procedures by PKR1,200, and other charges by PKR800, making a cumulative reduction of PKR4,600. However, this reduction did not bring significant results as the cost of care was enhanced by seven percent from January 2002 by the Budget and Planning Department, which impacted on the subjects of experimental group.

Similarly, the review of the cost analysis of the last five years indicates that the cost of TURP surgical intervention was enhanced every year. In 1998, a total of 135 patients underwent TURP surgical intervention and the cost per case was PKR37,073; in 1999, a total of 154 cases had a cost per case of PKR53,237; in 2000, a total of 169 cases had a cost per case of PKR55,079; in 2001, a total of 210 cases had a cost per case was PKR62,761, and in 2002, there was a total of 186 cases with a cost per case of PKR65,011. Graph 1 shows the annual increase in cost of TURP surgery, indicating a cumulative 43% increase in cost over a period of five years.

Graph 1
Annual increase in cost of TURP surgery



Rationale for cost increase

The findings of financial variances identified that the clinical pathway intervention did not impact on the cost of the TURP surgery. Therefore, the researcher conducted an in-depth review of AKUH's existing financial systems to explore the root cause of such a discrepancy, and identified some possible explanations as to why these results are different from those reported in the literature.

The finance and billing department of AKUH justified that cost of care is raised every year in line with inflation rates. The finance department provided written evidence demonstrating that all areas of financial measurement were upgraded due to the high inflation rates in the Pakistan economy. This upgrading impacted upon 80% of the subjects in the experimental group.

In spite of the fact that AKUH is physically located in a highly volatile economic pressure area, it does not receive financial assistance. Therefore, the increased cost of specific services is transferred to its patients by increasing the cost of care every year, in order to meet the costs associated with increased salaries of employees, promotion of employees, and cost increments in items due to inflation rates. Furthermore, other factors, such as rupee dollar parity, welfare requirements, and support to the medical college, impact on rate increases. The major reasons for the price

increases are the volatile macro-economic and political situation in Pakistan, particularly in Karachi, and the external factors that impact on AKUH functions. While the strategic plan for this planning cycle is realistic, external factors could have an adverse impact. The four key factors are described and analyzed below.

Devaluation of the Pakistani rupee against international currencies is 10% p.a., 2% above the projected level of 8% p.a., which has reduced the operating surplus by $1 million Pakistani rupees over three years. Inflation is projected at an average of 8% p.a. Deterioration in the macro-economic conditions leading to an increase in inflation to the tune of 11% (i.e. an extra 3% p.a.) would translate to a depletion of cash surplus for the three years of $2.4 million Pakistani rupees. The cost of medical items has also been increasing, which contributes to higher health care expenditure. Volumes are projected conservatively, but a 3% downturn in the economy would lead to a reduction in the operating surplus by $2.5 million for the three-year period.

The size of the hospital market is increasing due to increased health care requirements among the population of Pakistan and other third world countries. According to the 'Household Survey' of 1,517 households conducted in 2000 by the Marketing Department, hypertension, diabetes, and heart diseases are the top three chronic conditions prevalent in the Karachi population. However, the unstable political and economic situation has contributed to an increased cost for hospital services while, at the same time, reducing the purchasing power of the citizens who are its prospective patients.

AKUH is a tertiary care university hospital, and the increasing complexity of its patient care has led to an increased demand for its professional staff. In addition, a global shortage of nurses has led to their migration for higher wages. To retain these professionals, the industry has had to pay more, thus increasing health care expenditure.

Another factor for the increased cost could be the increased utilization of the private wing (PW) facility by the experimental group. The PW rooms offer excellent services and comforts, which have been adopted from five star hotels. The PW room charges, therefore, are three times higher than the general ward charges. Besides the room charges, the cost of consultation, operating room charges, and anesthesia fees are also higher for PW patients than for patients in the general ward. The data on all financial charges, computed by the billing department, indicated that more subjects in the experimental group were hospitalized in the PW area of the hospital; 37% of patients in the experimental group requested PW beds compared to 28% of patients in the control group. The mean score of multivariate analysis conducted on the bed charges of the control and the experimental groups has further supported these findings. The mean score was 3.981 and the significance level was .047, indicating that the experimental group bed charges were higher than the bed charges for the control group.

Summary

In conclusion, the above section has outlined that clinical pathway intervention has the potential to reduce cost of care; in the current investigation there was a total cost reduction of up to Rs. 4,600. However, a significant difference was not achieved due to the hospital's standard increase in its cost of care, of seven to ten percent every year, to keep pace with inflation rates.

Section Four: Patient Satisfaction Survey

Patient satisfaction surveys are becoming popular tools to measure patient satisfaction with delivery of service in health care settings, and have been seen as a measurement of quality. The discussion in this section gives an overview of patient satisfaction survey findings, emphasizing the relationship of clinical pathways with patient satisfaction.

The patient satisfaction survey questionnaire in the current investigation was designed to seek feedback from hospital consumers on all aspects of patient care services and products. The survey data revealed that there was a significant difference in the satisfaction of patients between both study groups. The subjects of the experimental group were more satisfied, due to clinical pathway intervention, than the subjects of the control group.

The current investigation has discovered that clinical pathway intervention did enhance patients' satisfaction with hospital services. The major reasons for enhanced patient satisfactions were coordinated care among different disciplines; timely communication and discussion on health matters with patients and families; described and set length of stay; timely education of patients by physicians, nurses and other providers; ongoing follow-up; and reduced delays in several aspects of patient care. King (1981) stated that application of knowledge in clinical assessment, identification of goals, implementation of plans and evaluation of outcomes leads to improvement in feeling and perceptions. Similarly, the clinical pathway of TURP utilized a systematic approach in care delivery to improve patient satisfaction. The study findings on physician, pre-admission, nursing, and discharge related variances have shown a significant improvement in patient's core processes. These were the main contributing factors for enhanced patient satisfaction. Similar findings were discovered by Braynt (1998), who noted a strong relationship between patient and provider satisfaction; when providers give detailed explanations, share control, seek feedback, and display warmth and concern, this leads to high patient satisfaction, and if patients are satisfied they will recommend their provider. Patient satisfaction with nursing care has been shown to be strongly related to overall satisfaction with the healthcare encounter in many studies

(Abramowitz et al., 1987; Batalden & Nelson, 1990; Carey & Posavac, 1982; Hays, Nelson, Rubin, Ware, & Meterko, 1990).

Jerry (2002) stated that caregivers (nurses) have influence on patients' hospital satisfaction. Her study indicated that nurses can have a particularly important influence on the cognitive process by which patients develop hospital satisfaction. Jerry (2002) discovered that patients' evaluation of their nurses was a key variable that affected their overall hospital satisfaction. Celland et al. (2001) conducted a research study to measure the impact of laproscopic cholecystctomy clinical pathway on patients' satisfaction. They found that patients were highly satisfied with provided care due to clinical pathway implementation. Healy (2002) found in his study that clinical pathway and knee-implant standardization enhanced patient satisfaction. He reported the patient satisfaction score of the control group was 98% and experimental group was 99%.

Analysis of each question in the patient satisfaction survey has revealed that patients were highly satisfied on several aspects of care, such as admission process; coordination among care providers; communication on progress of patients to patients and families; keeping patients informed regarding their length of stay during hospitalization, discharge arrangements; and some other aspects of care. Dasu and Rao (1999) stated that failures in services are inherent and take different forms: doctors cancel appointments, pharmacies give out wrong prescriptions, flights are delayed, hotel room reservations are lost, and waiters are rude. Customers perceive service failure when a service provider's performance fails to meet their expectations.

It appears that customers generally do not expect services to be perfect, and there is evidence to support that it is not service failure that affects customer satisfaction, but the service provider's actions or recovery following the failure or poor service. How effectively the firm responds to a customer's expectations of recovery

affects that customer's perceptions of service quality, and, eventually, they encounter dissatisfaction. Dasu and Rao (1999) suggested that customers experiencing failures that are handled well are likely to experience greater levels of satisfaction than customers who did not experience any problems.

Analysis of the information provided to patients and families on administration of medication administration (survey item eight), showed no significant difference between the two groups. Patients commented that adequate explanation was not provided to them regarding medication administration. This is an important area of improvement for hospital management. Eaton (2003) at the Picker Institute of Europe in his study found that only 28% patients felt that they had been completely informed about the drugs while 43% patients felt that they had only been partially informed or not informed about drugs and remaining 30% patients felt that they did not need any explanation about drugs. Education and explanations to patients surrounding safe administration of their medication has been identified as an important aspect of patient care by the Joint Commission International Accreditation (JCIA). The accrediting manual of JCIA devotes a whole chapter to safe medication administration, and emphasizes the importance of explanation of medication administration to patients. This was an important area outlined by patients, and requires improvement.

Another aspect of care where patient satisfaction showed no significant difference concerned adequate explanation provided by physicians regarding care (survey items eleven and twelve). Physicians are primary owners of care and satisfaction. In developing countries such as Pakistan, where the nursing public image has not yet changed, patients rely more on the physician's explanation and expect it to be adequate and complete.

Questions seventeen and eighteen were designed to seek patients' comments and suggestions on the hospital system. Consumers are considered the best judges of service, and their suggestions and comments are treated as opportunities for hospital administrators to improve their core processes. Attribution theory has supported this concept, which is a respected psychological theory that has been strongly supported by psychological research. One of the essential principles of attribution theory is that individuals (hospital patients) will search for understanding. Another principle of attribution theory is that during that search they will act like psychologists to understand the behaviors of people around them. Psychological theory has proven to be quite valuable for deepening the understanding of how people evaluate others (Jerry, 2002). Attribution theory and the disconfirmation of expectations paradigm will allow hospital administrators to understand how patients evaluate hospital staff and develop hospital satisfaction (Jerry, 2002).

Out of 200 subjects, 70% provided comments and suggestions to improve hospital systems. The areas of opportunities outlined by them were to decrease the cost of care, and improvement of communication among care providers.

The thematic analysis of the responses to questions seventeen and eighteen revealed that clinical pathway intervention did overcome patients' dissatisfaction in many areas, such as attitudes of health team members, discharge process, deficiencies in clinical assessment and slow services provided by staff. This is consistent with the physician and nursing related variances where chi-square findings were also significant, indicating that several core processes of patient care did improve due to clinical pathway intervention. However, one theme relating to cost of care was an area of concern in both study groups. This was also confirmed by the findings of financial variances where no significant decline was observed in the cost of care due to clinical

pathway intervention. The study findings of variances/outcomes were congruent and similar with the results of patient satisfaction survey findings.

Analysis of patients' suggestions was quite elaborate and detailed. Both study groups offered suggestions regarding medication administration, provision of quality food, and improving communication among staff. However, more suggestions were obtained from subjects in the control group than the experimental group, and suggestions regarding hospital facilities, consultants' rounds, and errors in billing were only revealed from subjects of the control group. Suggestions regarding availability of air-conditioning in some patient care areas, and the provision of facilities for family attendants who stayed with the patient to sleep during the night was another important suggestion. This suggestion will be a real challenge for hospital management because, while hospital policy allows an attendant to stay with the patient for 24 hours, current facilities only provide these patients' family members with a chair.

Safe administration of medication is a key nursing function, and AKUH undergoes medication certification and re-certification every year. In spite of this, as 60% of nurses working at AKUH are novices, errors do occur. Subjects of both study groups offered five suggestions in this regard, particularly emphasizing preventing delays in medication administration.

The concept of communication brought out seven suggestions (five from the control group and two from the experimental group) focusing on the gap in interdepartmental communication between nurses and physicians. However, the number, intensity and nature of the suggestions offered by subjects of the experimental group reported some improvement, indicating that the clinical pathway did improve communication among health team members. King (1981) has considered communication a key for establishing mutuality and trust between nurse and patient and

the means to validating perceptions, establishing patient priorities and moving the interaction process towards goal setting. Likewise, integrated clinical pathways have the potential to improve communication at all levels.

SUMMARY

In conclusion, discussion in the previous section has indicated that clinical pathway intervention played a major role in improving consumer's satisfaction. However, the crucial comments and suggestions offered by patients require further refinement of core processes.

Section Five: Staff Satisfaction Survey

In the language of Total Quality Management (TQM) and Continuous Quality Improvement (CQI), the staff of the hospital are the internal customers of the organization, and the TQM philosophy believes that external customers (patients) can only be satisfied if internal customers (employees) are happy and productive. Section five of this chapter discusses the findings of the staff satisfaction survey.

The staff satisfaction survey was designed to seek feedback from staff who cared for patients undergoing TURP surgical intervention. The staff satisfaction survey was structured to explore staff demographics, years of experience, communication among health team members, co-ordination of care, patient education, and benefits of the clinical pathway.

There was a significant difference in the satisfaction of patients between the control and experimental groups. The analysis indicates that the majority of study subjects had experience of less than two years, indicating a high turnover rate of staff. Khowaja (1999) also found that the turnover of nursing staff in 1998 was 36%. Furthermore, 60% of registered nurses at AKUH had experience of less than two years.

The study subjects were mostly nurses, technicians, physicians or medical interns, who were direct caregivers and were affected by the clinical pathway intervention. The following dimensions of staff satisfaction survey require discussion.

SATISFACTION WITH ASPECTS OF CARE

One of the most important positive findings emerging from the analysis of staff interview data was that all the staff in the experimental group stated that clinical pathway intervention had increased their satisfaction in delivering important aspects of patient care. The areas where analysis showed significant improvement were delivery of patient care in consistent and well organized manner; improvement in communication among staff members within the surgical discipline and also among other disciplines; provision of information to patients in a consistent manner; satisfaction in conducting patient education; satisfaction with discharge planning; and satisfaction in the provision of explanations to patients and families. Kovner, Hendrickson, Knickman, and Parsons (1994) stated that the changes in the work environment such as implementation of case management, shared governance, reorganization of care delivery models have role in improving in the staff satisfaction.

One of the positive findings of the analysis of the staff satisfaction survey was that family members of patients were identified and documented on the clinical pathway for updating patient's progress. This not only saved staff time, but also maintained confidentiality surrounding the patient's affairs by restricting information to close relatives only.

SATISFACTION WITH CLINICAL PATHWAY INTERVENTION

One of the central purposes of questions 10 to 16 was to provide staff with the opportunity to have a voice about the clinical practice of clinical pathway. These

questions encouraged subjects to share their opinions, make contributions, and discuss practice issues related to clinical pathway implementation.

The survey findings showed that all 37 subjects showed 100% satisfaction with their the awareness created for the clinical pathway, and with the education surrounding its implementation In the methodology section, it was discussed that during the experience phase all staff were made aware of the clinical pathway during formal education sessions. Furthermore, some staff were involved in the design phase of the clinical pathway as a means of gaining their maximum cooperation.

All study subjects showed 100% satisfaction with the time saving benefits of the clinical pathway (survey item 12). Staff commented that the clinical pathway provided them with a framework to deliver patient care, and that all aspects of care from ambulatory clinics until discharge were clearly outlined, allowing them to complete aspects of care without delay. This also impacted positively on their levels of confidence and autonomy.

Item 13 of the staff satisfaction survey explored staff satisfaction with the content of the clinical pathway. Thirty-two (86%) of staff subjects were satisfied with the contents of the pathway, commenting that it covered all the required information. The contents of the clinical pathway were developed through the efforts of a multidisciplinary team, who studied existing pathway formats used by Johns Hopkins Hospital, in the U.S., and St. Vincent's Hospital of Melbourne, Australia, as well as other formats detailed in the current literature. Several drafts were reviewed before arriving at the final clinical pathway format.

Survey questionnaire items 14 and 15 of the staff satisfaction survey were designed to reflect staff opinions on multidisciplinary interaction, such as interaction among health team members and coordination in patient care. The satisfaction score on

these two areas was 91%, indicating high staff satisfaction among the experimental group involved in the clinical pathway implementation. In King‘s conceptual framework, the multidisciplinary team forms an interpersonal system. A nurse is a very important part of that interpersonal system. The clinical pathway model allows the nurse to interact with other health team members during all phases of the clinical pathway, thus enhancing motivation and satisfaction towards delivery of practice.

Survey questionnaire items 16, 17, and 18 invited staff to give their opinions regarding benefits of the clinical pathway, positive and negative interaction related to clinical pathway, and staff comments and suggestions. The thematic analysis on these items has outlined the following reactions.

Study subjects commented that the main benefit of the clinical pathway was time-saving. As all aspects of patient care were well-documented on the clinical pathway, staff saved time by not having to contact physicians and remind them to write physician orders on aspects of care.

Staff participants demonstrated positive reactions toward clinical pathway implementation. They were impressed by the user-friendly format, as they felt there was transparency in written orders of physicians; in traditional practice, nursing time is often spent contacting physicians to clarify or expand on some aspects of patient care. This was supported by the data collection phase of the control group, where 88% of physician orders were incomplete and inappropriate. John (2003) stated that nurses at the Children’s Hospital in San Diego (California) reported that clinical pathways are time-saving, as nurses no longer have to seek out physicians to add something to orders.

This concept was clearly evident across all staff satisfaction survey questions in the control group, where staff commented that they were not sufficiently educated or

prepared to deliver care to TURP patients. Therefore, they were unable to resolve patient care issues when faced with problems.

Another important theme that emerged through the analysis of the staff satisfaction survey responses from the control group was the non-availability of educational pamphlets and booklets for patient education. Several staff commented that they had concerns about their knowledge deficit on the disease process, and non-availability of educational material further prevented them from educating patients.

SUMMARY

The discussion in the above section concludes that the clinical pathway intervention improved staff satisfaction, enabling them to deliver coordinated care to their patients.

Support for Conceptual Framework

The findings in this investigation add to the existing evidence in support of the relationship between clinical pathways and King's conceptual framework and theory of goal attainment. King is universally recognized as a pioneer of nursing theory development. Her interacting conceptual system for nursing and her theory of goal attainment have been included in every major nursing theory text and taught to thousands of nursing students, form the basis of nursing education programs and are implemented in a variety of service settings (Frey et al., 2002).

Clinical pathways on all steps, from designing to delivery, place an emphasis on patient care. The main purpose for introducing this new model, which is integrated and multidisciplinary in nature, in the Pakistan health care delivery system, is to improve the core processes of patient care. King's theory of goal attainment provided the theoretical framework for this quasi-experimental study design, exploring the benefits of clinical pathway on clinical quality, cost, and patient and staff satisfaction. The concepts underlying clinical pathway and King's theory of goal attainment have similar

characteristics, and the major emphasis of both is to improve core processes of patient care. Macario and Lubarsky (1998) stated, “Clinical pathways standardize practice in the unique culture and environment of an individual hospital. The use of integrated clinical pathway facilitates continuous evaluation of clinical practice (Herring, 1999; Kitchiner, Davidson, & Bundred 1996; Macario & Lubarsky, 1998).

The results of this study clearly imply that an integrated clinical pathway shares several key characteristics derived from King’s conceptual framework and theory of goal attainment to improve the core processes of patient care.

First, clinical pathways are comprehensive integrated documents, produced by multidisciplinary collaboration from current evidence-based nursing and medical practice, and contains all key core elements of patient care required for recovery from disease. King (1981) claims that the theory of goal attainment is a normative theory; it sets the standards of practice. It allows interpersonal systems to interact purposefully and make transactions in nursing situations with purposeful communication to achieve patients’ health goals.

Second, in the current investigation, the concepts of evidence-based nursing—organizing, applying and communicating knowledge—were applied through the application of a clinical pathway in clinical practice with the aim of improving core processes of patient care, which resulted in enhanced patient satisfaction. Similarly, King’s theory of goal attainment emphasizes the importance of both critical thinking and new knowledge in nursing practice. King has revised her theory on an ongoing basis to make it an excellent fit with current trends in nursing, such as classification systems, evidence-based practice, and evidence-based nursing interventions. In addition, the King International Nursing Group’s (KING) primary goal is to increase

knowledge development for nursing based on the conceptual system and related theories.

Third, clinical pathways allow nurses to interact, within an interpersonal system, with the multidisciplinary team as well as with the patient. This interaction and transaction permits the nurse to ensure goals set in the clinical pathway are achieved, reduces delays in the delivery of care, and achieves best outcomes for patients. It is evident from the study findings that the clinical pathway was successful in reducing delays and improving core processes of patient care. Likewise King (1981) stated, "This theory of goal attainment, derived from the conceptual framework, organized elements of the process of nurse-client interaction that results in outcomes, that is goal attained" (p.143). King's concept of perception is also an important link to client outcomes, because perceptions are influenced by and sensitive to nursing interventions (Johnson & Mass, 1997).

Fourth, King's perspective of nursing science and its role in knowledge development for the discipline has been described by Frey, Sieloff, and Norris (2001) as follows: to provide an overview of the application and extension of the conceptual system to date; to identify areas that would maximize the contribution of practice and research applications; and to examine the potential for ongoing contributions in the 21st century. They demonstrated how King's system and theory of goal attainment closely fit with classification systems—such as nursing diagnosis, interventions, and outcomes, suggesting that the theory of goal attainment is critical to evidence-based practice. The integrated clinical pathway of TURP was similarly evidence-driven. All aspects of patient care from ambulatory to discharge were based on current evidence of patients with TURP surgical intervention. As suggested in the literature section on TURP, the concepts of length of stay of five days, decisions regarding what diagnostic procedures

to be performed during consecutive hospital days, when to ambulate, how long to catheterize, the type of medications to be administered, the type of medication to be restricted, the type of anesthesia to be administered/restricted, and all other care concepts set out in the TURP pathway were taken from the current evidence. Therefore, clinical pathway and King's theory share an emphasis and focus on evidence-based practice.

Fifth, King (1995a) describes interpersonal systems as two or more persons interacting, and states that the concepts of interaction, communication, transaction, role and stress are essential to understanding such systems. Interaction, as descried by King (1981), is the process of two or more people perceiving, making judgments, and reacting to each other's perceptions of the other. Likewise, clinical pathways focus on multidisciplinary collaboration and interaction. Study findings have revealed that all types of variances particularly nursing and physician related variances show significant improvement in core processes of patient care due to clinical pathways.

Sixth, the concept of communication, as it takes place between nurses and patients, is essential to effective nursing care (King, 1981). According to King (1981), the concept of roles requires individuals to communicate with one another, and to interact in purposeful ways to achieve goals. The subjects of the current study found communication as being very important to feeling supported, receiving information, having reassurance about their disease, and feeling listened to. This was proved via significant findings in the patient satisfaction survey. The patient satisfaction survey also identified a significant improvement in communication to patients by multidisciplinary teams. Specifically, question 2 related to keeping patients informed while waiting for admission; question 3 concerned keeping patients and families informed about recovery from the current illness; question 4 was regarding keeping

patients informed about their length of stay in the hospital; and question 5 covered communication of the patient's condition to patients and families from time of admission until discharge. The findings from the responses to these questions showed significant improvement in interaction and communication of health team members with patients and families in the experimental group due to clinical pathway intervention.

Seventh, the concept of transaction as explicated by King (1981) is the transfer of valued things between two or more persons and implies bargaining power, negotiation, and social exchange. There was consensus among the study subjects from the experimental group around what constituted helpful relationships with the health care worker. Helpful behavior of care providers included cooperation, respect, shared decision-making, prompt services, information sharing, and being listened to. The negative comments related to high charges of services, medical surgical supplies and other diagnostic procedures.

Finally, the findings of the current investigation revealed that there were significant differences in the patient satisfaction survey due to clinical pathway intervention. The comments of the experimental group were very positive compared to comments of the control group. Patients commented that the staff were very cooperative and respected patients, and that the doctors and nurses helped them in a prompt recovery.

The King International Nursing Group, founded in 1997, has an ever-growing membership of nurse scholars interested in contributing to nursing science by advancing and extending King's conceptual system, theory of goal attainment, and related theories derived from the conceptual system. Activities of the organization focus on identifying current knowledge-building work based on King's nursing perspective, establishing

programs of research related to King's theory, and increasing the visibility of theories derived from King's conceptual system. In summary, King's contribution to nursing science is long standing and universally recognized. Her conceptual system is based on sound historical, scientific, empirical, and humanistic principles that are as salient for nursing today as they were in the 1960s. Continued work in developing and testing middle-range theories derived from the conceptual system and validating the theory of goal attainment will increase as the number of nurse scholars who work to advance and extend her perspective of nursing increases.

During the years, journal publications and textbooks of nursing frameworks and theories have moved through six stages: analysis, evaluation, practice applications, extensive, testing, and integrative reviews. Overall, King's conceptual system demonstrates a high degree of internal and external situation and external analysis (Fawcett, 2000; Frey, 2002), an increase in clinical and research publications, and development of several middle-range theories in additional to the theory of goal attainment, the middle-range theory King herself (Fawcett, 2000; Sieloff, Frey & Killen, 2001).

Despite the number of citations provided by Fawcett (2000) and Sieloff et al. (2001), the overall contribution to nursing knowledge is less than expected because of the small number of publications, and their limitations in relation to the conceptual system. For example, Fawcett (2000) identified 43 master's theses and 20 doctoral dissertations using King's work. Frey, Sieloff, and Norris (2001) identified an additional master's thesis and three doctoral dissertations completed since 2000. The literature review for this study found that 100% of the master's research and 72% of the doctoral research has not yet been published. While some of these may appear in the literature in time, the reality is that most will not. This lack of published data presents

problems, not only to those interested in furthering nursing knowledge related to King's work, but to all nurses interested in advancing nursing knowledge in general. Efforts must be made to enable more extensive publication of nursing research so that the research itself can be further reviewed, critiqued, and replicated should this be warranted.

The application of King's conceptual framework and theory of goal attainment in the current investigation generates new knowledge for the framework of nursing. The current study has identified that all concepts of conceptual framework such as communication transaction, interpersonal relationship, perception and evidence-based practice were applied in clinical practice in the form of clinical pathway intervention. This allows future nurses to replicate the same concepts of King's theory in their clinical practice in order to further enhance the nursing profession and increase nursing autonomy, empowerment, and respect among other professionals. Such application of knowledge is even more important for nurses in developing countries, where the nursing profession requires further recognition and respect by nurses themselves, their professional colleagues, their families, their clients and their communities at large. Furthermore, the relationship between King's theory and clinical pathway will enhance nursing knowledge and will make them distinct, professionals in the health care system.

Conclusion

This chapter discussed the findings of the current investigation and current related literature, focusing on the fundamental areas requiring improvement that should be addressed by future researchers. The discussion has identified that clinical pathways are a potential model to improve core processes of patient care and offer a framework and scope for the multidisciplinary team to function smoothly. However, the discussion has identified that cost reductions as a result of clinical pathway implementation will only

occur if financial systems are strengthened and there is no impact of geo-political situations on hospital costing systems.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The fundamental aim of this investigation was to explore the impact of an integrated clinical pathway of TURP on clinical quality, cost, and staff and patient satisfaction. It was anticipated that the study would, firstly, contribute specialized knowledge to an under-researched area of clinical nursing practice; and, secondly, produce knowledge, evidence and insight into clinical pathway utilization in hospital settings so that patient related outcomes would be enhanced. It was also anticipated that, in offering the potential to replicate the model in other services of the health care system, the findings would contribute to the improvement of outcomes at large.

The study utilized King's interacting system framework and theory of goal attainment to explore the phenomena of interest, and to inform and guide both the direction and process of research. This framework contributes new knowledge to nursing literature, as the reported benefits of clinical pathways have never been scientifically tested utilizing King's interacting system framework and theory of goal attainment.

The key features of the planning phase were designing the clinical pathway with multidisciplinary collaboration; designing of instruments by the researcher, developing formats for these instruments; conducting the literature search; converting formats into the Urdu language; seeking expert opinion on the formats; and printing, stocking and storing data while conforming to ethical principals of consent and confidentiality.

In subsequent phases of the investigation, empirical means were used to generate further knowledge and understanding of the subject. The researcher worked collaboratively with two data collectors to gain a deeper understanding of clinical practice and to identify key areas for examination through investigation.

The study objectives incorporated the holistic perspective, in which all dimensions of quality were measured. Lowthers (2001) stated that the three main dimensions of quality are access, clinical quality, and patient experience. Access refers to the ease with which health consumers can obtain care in the face of financial, organizational, cultural, and emotional barriers. Clinical performance is the delivery of clinical services appropriate for each patient's condition, which is provided safely, competently, in an appropriate time frame, and achieving the desired outcomes in those aspects of patient health and patient experience affected by clinical services. The dimension of patient experience includes satisfaction, communication and information, respect and caring, as well as continuity and coordination.

Keeping Lowther's (2001) views in mind, the study objectives were framed to measure all related concepts that were affected by the intervention of clinical pathway. Furthermore, the research instruments were designed specifically to assess all directions of care. The data collection process utilized multiple data collection approaches such as review of patients' medical records, day to day observation on clinical practices of patients from admission to discharge, and review of patients' records 30 days from discharge to discover re-hospitalization rates. Data collection processes also included computing of patients' bills after discharge on all service sub-components charged against the patient during hospitalization. Finally, data collection included assessment of satisfaction of patients and staff through distribution of satisfaction survey questionnaires to all study subjects.

The discussion of the findings in the previous chapters met the overall research aims by providing an extensive justification and reasoning in all areas of analysis, including critical insights and understanding of the competing interests and discourses in which clinical quality could be made more cost-effective. The discussion in the following section takes into account the data as a whole, contemporary issues, and critical insights identified in previous chapters to form conclusions and recommendations from the study in order to improve core processes of patient care though use of clinical pathways.

Conclusions

The first conclusion to be drawn from the present investigation is that clinical pathways have much to offer the health care organization and the individual practicing clinician. It provides a proactive, locally owned facility by which the multidisciplinary team can critically review and improve their processes and practices of care delivery to achieve the agreed clinical outcomes, through the provision of best possible practice within the available resources. Clinical pathways play a pivotal role in the current framework in improving quality in the health care setting.

Browne (2001) stated that current trends clearly show that clinical pathways are used in many hospitals of the western world. Clinical pathways are considered a potential tool for quality improvement, and have tremendous appeal because of their multidisciplinary methods, and their focus on process and outcomes of care and on reducing unnecessary variation in treatment. The clinical pathway of TURP at AKUH had a similar impact. It improved the clinical quality by the monitoring of variances and outcomes, significantly improved all types of variances, and enhanced the patient and staff satisfaction.

The study findings have established that clinical pathway intervention replaced traditional nursing practice with multidisciplinary collaboration, by integrating nursing and medical documentation. This clinical quality model has enhanced consistency, continuity, and coordination in the delivery of patient care, and has also raised nursing autonomy and image among other health team members in countries like Pakistan.

It is clear from the research findings of the current study that clinical pathway implementation significantly improved core processes of patient care, reduced delays, improved discharge processes, and enhanced patient and staff satisfaction for TURP service. The same model could be replicated in other clinical services at AKUH, and could be extended to other health care settings of Pakistan and Asia.

The study established that while the central function of clinical pathways is to impact on clinical quality, and patient and staff satisfaction, the role of clinical pathways in developing countries could be extended to impact on the cost of patient care. Because clinical pathways serve as a blueprint of patient care from admission to discharge, administrators and budget and planning departments would do well to use these pathways as the basis for computing realistic costs of patient care, rather than merely increasing the cost of services every year.

Another finding of the critical analysis of the interview data was that patient satisfaction was significantly improved due to implementation of the clinical pathway. Patients were satisfied with health team members, but not with the cost of care, as they found AKUH to be very expensive, congruent with the study findings.

In discharge related variances one of the critical evidences identified was that physicians were not writing discharge timings on discharge orders; therefore, it was difficult to measure the discharge process. This issue of discharge delays requires

further attention from hospital administrators in order to improve associated core processes.

It was also clear from the research findings that clinical pathways improved staff satisfaction. A significant difference was observed in the satisfaction of caregivers in the experimental group. The study findings outlined that the subjects of the experimental group had awareness and education regarding clinical pathways. The major benefit of clinical pathways from the staff perspective was that the model saved their time. All 37 staff subjects confirmed that clinical pathway activity was time saving. They commented that the clinical pathway was a comprehensive document, which allowed them to follow core processes of patient care without wastage of time. The other benefits of the clinical pathway from the staff perspective were improved coordination, clear and complete documentation, increased communication, increased patient education, and decreased length of stay. The major positive reaction from staff was the transparency in written physician orders.

The final conclusion drawn from the study relates to the appropriateness of the conceptual framework for the present investigation. The researcher asserts that the critical conceptual framework of King's interaction theory of goal attainment was entirely suitable to the needs of this study. This conceptual framework enabled the researcher to match the concepts of framework with the clinical pathway intervention in order to replace traditional nursing practices with this integrated model so as to enhance patient outcomes. The critical perspective encouraged the researcher to explore the historical, social, practical, clinical, and technical domains of clinical pathways in the health care setting of AKUH, and, as part of this process, produce insightful consciousness and raise understanding of clinical pathways among health team members.

Recommendations

It was clear from the research findings that the clinical pathway improved clinical quality, and patient and staff satisfaction. However its impact on cost and financial variances was not significant. The discussion in Chapter Six identified a number of significant issues affecting hospital systems, as well as some existing flaws in the financial process at AKUH. Therefore, the present study offers a range of recommendations summarized in Table 25, not just for nursing, but for financial systems as well. These recommendations have a number of implications for further research in this area.

Table 25
Recommendations of Study

1	**Expansion of integrated clinical pathway model**
2	**Professional development of nurses to enhance professional image, nursing education, nursing documentation and multi-disciplinary team education.**
3	**Further research on effectiveness of clinical pathways**
4	**Improvement in hospital discharge policy and practice.**
5	**Reduction in the cost of care by introducing efficiencies in cost control measures.**
6	**Improving budgetary processes and proper budget application and allocation**
7	**Developing packages on the basis of clinical pathway.**
8	**Improving costing systems by utilizing activity based costing methods.**
9	**Influencing consumers by consumer protection, social marketing and introducing quality costing.**

EXPANSION OF INTEGRATED CLINICAL PATHWAY MODEL

It is evident from the findings of the current investigation that the utilization of a clinical pathway for TURP patients at AKUH, Pakistan, achieved benefits similar to

those identified in the literature as having been achieved in western health care systems. The clinical pathway offered considerable advantages, impacting on all aspects of patient care, such as variances and outcomes, clinical indicators, and patient and staff satisfaction. “An integrated care pathway determines locally agreed, multidisciplinary practice based on guidelines and evidence where available, for a specific patient/client group. It forms all, or part of, the clinical record, documents the care given and facilities the evaluation of outcomes for continuous quality improvement” (Currie & Harvey, 1998, p. 35). There is a great need that such a model should be replicated in other clinical specialties at AKUH, in order to improve health care in totality in this heath care setting. There is a further need that the success of this quality model should be published in the magazines and journals of Pakistan, as well Asia, to benefit health care institutions in the region.

There is also a need to conduct further research into the development and application of clinical pathways in other clinical settings, incorporating the perspectives of all disciplines involved, such as medicine, pediatrics, and psychiatry, where predictions of outcomes are not known.

Professional image

There is a great need to change the public image of nursing among the Pakistani population, so that the profession is more respected by patients and their families, as well as by professional colleagues, such as physicians, pharmacists, dietitians and physiotherapists. It is imperative, therefore, that nurses as individuals and as a profession become more aware of this issue and its relevance to them. It is important for nurses to move towards multidisciplinary approaches and replace their traditional delivery of care with collaborative models. Nurses must demand from their profession

that, along with creating a safe patient care environment, they must work in collaboration with other health care professionals as unique professionals. The transactional model of King's theory gives nurses autonomy and provokes their critical decision-making when they interact and communicate those formulated goals for patients' recovery to other professionals. Through this collaborative process is the opportunity for nurses to demonstrate critical decision-making based on evidences, and demonstrate themselves as partners in a multidisciplinary team.

Nurse education

Opportunities should be made available for nursing students to study this model and relate it to nursing process. Nurses should be made aware that time-consuming nursing care plans keep them away from patient care, and do not benefit the multidisciplinary team. Strategies should be designed to facilitate understanding in the relationship between nursing process and the clinical pathway model. Workshops, seminars and nursing forums should be organized, where nurses can review benefits of clinical pathways for their profession, and debate on replacing traditional nursing practices with collaborative ones. Furthermore, the Pakistan Nursing Council (PNC) should revise the nursing curriculum for undergraduate and graduate programs to include the clinical pathway model in nursing curriculum. Educating nurses in the areas of critical thinking, multidisciplinary collaboration, and evidence-based nursing practice, and helping them develop and appreciate a strong sense of team identity, will make them unique professionals.

Novice nurses

One important purpose of introducing clinical pathway model in nursing practice is to assist nurses, particularly novice nurses, to deliver safe care to patients. The shortage of

nurses is a world-wide problem, which impacts more on developing countries where nursing turnover rates are high due to migration abroad for professional and economical reasons. Khowaja and Nensey (1999) determined that the turnover rate of nursing staff at AKUH in 1996, 1997 and 1998 was 21%–25%, which is quite high compared to the international nurse turnover rate of 15% (Health Care Advisory Board, 2001). In addition, Khowaja, Merchant, and Hirani (2002) discovered that 62% (276) of the hospital's nurses had less than two years experience. Clinical pathways can serve as guidelines for practice for novice nurses.

Nursing documentation

Nursing documentation formats need to be reviewed to make them more concise, thus helping to reduce the frustration felt by nurses caused by too much nursing documentation. The clinical pathway model will assist in this, ensuring that nurses can deliver patient care for a specific disease pattern in a safe and competent manner in line with international standards.

Multidisciplinary team education

The multidisciplinary team needs to be fully informed and educated about the improvements to clinical quality that can be achieved through the implementation of clinical pathways. It should be made clear to them that clinical pathways serve as audit tools, ensuring continuous monitoring of clinical practices. The analysis of variance monitoring should be shared with the team on a monthly basis to review the gaps in practice and to formulate strategies to overcome those gaps. This practice of monitoring and evaluation continues until best outcome in patient practice is achieved and quality culture is an outcome. The heightened awareness of the clinical pathway model among

the multidisciplinary team will encourage maximum participation in all phases of the pathway implementation

FURTHER RESEARCH

In view of the current paucity of evidence concerning the effectiveness of clinical pathways, hospitals and healthcare organizations should be encouraged to publish their evaluations of pathways. National and professional associations should also be encouraged to establish standardized criteria for evaluation of clinical pathways.

However, there are still serious concerns regarding the effectiveness of clinical pathways, and questions remain surrounding their development, implementation, and cost. Methods to develop pathways remain unstudied and are still evolving, with wide variations seen among institutions in their approach. Considerable research is needed to explore which methods of pathway development and implementation are most likely to provide benefits. As the technology of clinical pathways and their application expands, an important challenge for researchers will be to develop rigorous methods of evaluation techniques to assess their impact.

IMPROVEMENTS IN HOSPITAL DISCHARGE POLICY AND PRACTICE

The findings of discharge related variances in the current study has identified that there is a great need to improve discharge processes at AKUH. The safe and effective discharge of admitted patients will facilitate admission of those patients waiting in ambulatory clinics and emergency. Frank (2003) stated that physicians must work to improve the discharge process by establishing guidelines for reducing discharge delays. There is need for discharge procedures to be approached collaboratively by all heath team members. The clinical pathway model promotes awareness among heath team members regarding length of stay of patients, as it is decided on the development stage of the clinical pathway. Health team members should make discharge plans, and

communicate such plans to patients and their families on an ongoing basis, to ensure the process runs smoothly.

Furthermore, all health team members should be made aware of the benefits of early discharge. Besides preventing patients and their families from waiting in ambulatory clinics and the emergency room, early discharge conserves nursing and other resources. A considerable amount of time is invested by admitting personnel and other staff in providing information to patients and their families on bed availability. Furthermore, if patients are admitted to other units due to prolonged waiting, additional resources are used in transferring these patients back to their appropriate locations. There is a need to conduct further research in this area to assess the relationship between early discharge and its impact on cost of human resources.

REDUCTION IN THE COST OF CARE

Patient accessibility remains a key commitment for AKUH. The mission of the hospital, as approved by Board of Trustees, alludes to accessibility. Through the mission, AKUH is made accessible to the population of Pakistan through a systems approach by having several laboratory and mini-pharmacy services located in areas separate from the main hospital. The second focus area for accessibility is financial accessibility for patients who cannot afford treatment, or who have financial difficulties. High prices are generally quoted as the foremost area for improvement in every patient survey, whether inpatient, outpatient, laboratory, radiology or emergency room.

The three major core systems of a hospital are: a) getting patients into the hospital; b) diagnosing and treating their illness; and, c) ensuring that the hospital is paid for its services. It is most important that these core activities are focused upon with adequate measures of effectiveness, resource consumption, cycle times, and customer satisfaction. The issues with respect to patient accessibility are fairly global and will not

be solved by departments acting on their own. Rather, commitment must be exercised by senior multidisciplinary groups who can provide the ongoing guidance and monitoring to ensure a successful outcome. It is necessary that such accessibility groups maintain an ongoing focus, set targets, identify the areas of bottlenecks and strengths, remove the bottlenecks, and ensure that improvements in accessibility take place.

The following suggestions concerning financial accessibility can make AKUH cost-effective while remaining a quality institution.

Efficiencies in cost control measures

The AKUH, a private sector institution in a low-income country, can be made accessible by developing efficiencies in cost control measures within the hospital system. Although cost and quantity are the variables in the computation of efficiency measures, it is very important to integrate these variables with quality. A hospital is efficient if it can render quality services in the most cost-effective manner.

According to Pena and Ndiaye (2002), efficiency can be narrowly defined as the optimum utilization of inputs at a lower cost. In business, an efficient organization with a lower production and administrative cost is more profitable and competitive. In the not-for-profit sector, an organization's performance is judged by its ability to contain operational costs within a fixed budget. Although the development of efficiency measures encompasses the whole financial system, the following areas in financial management have a direct relationship with the process, and can help AKUH to be efficient in its financial system.

Cost effective analysis

The AKUH needs to have an effective cost analysis system, which involves the process of determining the most efficient and effective allocation of economic resources. There

are two approaches to cost-effectiveness analysis. One is Lesser Cost Method (LCM), and the other is Benefit Cost Ratio (BCR). In LCM, an alternative is cost-effective if it can achieve specific objectives at a lesser cost. Lesser cost method measures are used for analyzing operational efficiency, an integral part of operational budgeting. Another approach to cost-effectiveness analysis is known as the Benefit Cost Ratio (BCR). In BCR, an alternative is considered cost-effective if it can generate more units of benefits. Cost-effectiveness analysis, most notably the LCM, is being used to develop efficiency measures. The budget and planning department of AKUH must work in collaboration with the marketing department and outline the market competitors of AKUH. Budget and planning can also use LCM to ensure that specific objectives are achieved at lower cost. If good products or services are provided at reasonable costs, accessibility will increase, and volume will also increase. More volume will give more revenue and better utilization of existing resources.

Improving operational budgeting process

There is a great need to improve the existing operational budgeting process and give it transparency. According to Pena and Ndiaye (2002), operational budgeting is the process of allocating financial resources to a list of cost items (in line item budgeting), or to a list of activities (in performance budgeting). The method used to combine these cost elements determines the efficiency of an organization, or the cost centers within the organization. Similarly, if at AKUH surgical services have yearly defined goals related to services, research and training, a budget should be allocated in totality to measure the impact of these set goals and objectives. This means that the cost of utilities, housekeeping, human resources (physician, anesthesia, and nursing), and everything else would have expense and revenue lines within surgical services. This transparent cost structure system would allow management to draw a total picture of the financial

efficiency of surgical services by measuring gains in terms of outputs. In this way, hospital management would be able to see whether costs of resources and technology are higher than projected revenues. Then, rather than increasing the cost of services in order to become efficient and productive, the cost of resources and technology could be reduced until the incurred expenses are covered.

Application of capital budgeting process

As with the operational budget process at AKUH, the hospital's capital budgeting also requires improvement. According to Milligan and Witek (1992), the capital budgeting process allocates capital funds to alternative investment opportunities as an initial investment cost. Once the project is implemented, there is a need to allocate money for periodic costs, consisting mainly of operational and maintenance costs. At AKUH, feasibilities are prepared for initial investment during the capital budgeting process; however, there should be a system of ongoing monitoring to measure if the expected payback period has been achieved. These two categories of costs (initial investment and periodic costs) should be taken together and measured against the potential benefits of the projects over the economic life of the investment. From this point of view, if the value of the net benefit discounted over time is greater than the opportunity cost of applied capital, the investment will be considered economically feasible. AKUH must realize that only feasible projects should be considered in a capital budget. Construction of new facilities, procurement of major equipment and services, establishment of new operational units, and other projects requiring significant investments are considered as capital projects. Mistakes in capital budgeting will translate to an unnecessary burden of high depreciation cost in a form of fixed cost, and higher maintenance cost in a form of semi-variable costs, leading to inefficiency in the system.

Improving cost accounting process

As discussed earlier, AKUH's cost accounting process is in its infancy and has many openings for improvement. Cost accounting is the process of determining the fixed and variable cost elements involved in the production of goods and services. Without cost accounting, the producer cannot price products or services accurately. For example, at the time of determining the price for TURP, if the Budget and Planning Department does not have a breakdown of all services it is unable to accurately price the product and services. In private not-for-profit hospitals like AKUH, the cost of service also includes a surplus to meet capital costs, costs from administrative and other non-product departments, as well as applicable depreciation charges, cost from revenue centers, and costs from non-revenue departments. This pricing procedure is impossible to execute without a good accounting system.

Application of performance budgeting process

It is important for AKUH to include performance budgeting as part of its finance system in order to identify gaps in the system and remove them. Performance budgeting is the process of evaluating the performance of management through the use of financial related indicators. Performance auditing focuses on the performance of management, whereas financial auditing focuses mainly on the authenticity of accounting records, verification of receipts and disbursements, and the legality of financial transactions.

Efficiency measures, or cost control measures, are important performance indicators in performance auditing. For example, the number of claims and cost due to work related accidents in a year indicates performance in managing the safety of workers; the cost of x-ray services per patient is measures the performance of the radiology department in controlling or containing the cost of this service, and so on. A better notion of efficiency is comparative: if the cost of hospital/operator A is lower

than the cost of hospital/operator B, A will be considered “more efficient” than B. Similarly, in the surgical intervention of TURP, performance budgeting can measure operating room time and recovery room time against the set mean time from international targets to assess and improve their performance efficiency in these areas. The performance of different operators/surgeons performing TURP can also be compared to assess their efficiency.

Methods for determining levels of efficiency

AKUH needs to introduce methods for determining levels of efficiency into its financial management system. There are a number of methods for determining levels of efficiency. Some of the most common are experimental with standard cost, experimental with average cost, and open experimental between organizations.

Experimental with standard costs

It is recommended that AKUH develops standard cost to become efficient and cost effective. Government and corporations use standard costs as guideposts for estimating the total cost of production, provision of services, and construction of infrastructures, and for controlling prices and containing expenses. Standard costs are predetermined estimates of what one unit of a product is expected to cost or what it should cost to produce. Standards are determined by using historical results, time-and-motion observations, or theoretical calculations, and are developed based on previous experiences or through cost-effectiveness analysis. Standard cost is also used as a benchmark for determining the level of operational efficiency within organizations and agencies. An organization is considered efficient if it does not produce a deficit and the service does not deteriorate. Revenue-producing hospitals use standard costs for pricing

their services. These hospitals are considered efficient if they are able to sell their services within or less than the standard cost.

Experimental with average cost

Average cost is another evaluation criterion for determining organizational efficiency, and one which AKUH could adopt to improve efficiency in its existing costing system. Average cost is determined by taking the average cost for the industry; for example, average cost of hospitals in the region; average cost of private not-for-profit hospitals, average cost of for-profit hospitals; average cost of private hospitals owned and operated as businesses; and so on. Hospitals with costs equal or below the average are considered efficient. Professional associations can further compare their averages with averages in similar organizations or similar geographic regions.

In conclusion, cost centers may take many forms but they share one unifying concept: they are places for controlling and containing costs, and where efficiency battles are fought. Cost containment can be achieved through the targeting of major cost items. The idea is to concentrate cost containment and efficiency measures in the production of services “for sale” because of the direct relationship with profitability and the ability to compete. Efficiency measures are management tools to contain costs and to facilitate experimental achievement between hospitals, and different units of the same hospital.

Developing packages on the basis of clinical pathway

The AKUH needs to develop a package for the surgical intervention of TURP based on the clinical pathway model. Linking such pathways with cost estimations offered to clients will improve patient volumes. As clinical pathways define all patient processes from admission to discharge, reasonable cost structures can be built in by keeping all

core processes in mind. This would allow health professionals to limit investigations; medical, surgical, and pharmaceutical supplies would only need to be provided to meet a required level, and patients would not be charged for misuse or delay.

Cleverley (1997) proposed that health care organizations could cost their products by using a standard costing approach that is centered on the Service Units (SU), Standard Cost Profiles (SCP), and Standard Treatment Protocols (STP). In this system, he defined the treated patient as the product. Standard treatment protocols identified the SUs needed to treat different types of patients. Thus, the anticipated cost of a class of patient can be determined because the STP will identify all of the SUs to be consumed in treating a class of patient. The SUs, in turn, consist of SCPs. Under the Cleverley system, for each type of SU, there would be an SCP. This SCP would indicate, in fairly great detail, all of the cost elements for producing the SU. Similarly, clinical pathways detail all components of a particular procedure or process, which would help to standardize the cost of a service such as TURP.

Board (2000) has supported this idea, stating that in a study of a 224 elective surgery patients using a clinical pathway, the use of laboratory tests was reduced by about 70%: 1 versus 3 tests per patient for hernias, and 3 versus 7 tests per patient for cholecystectomy. For acute medical admissions, there were 12 versus 16 tests (mainly hematology and clinical chemistry) per patient using the clinical pathway. This indicates that significant cost control could be achieved if costs were calculated on the basis of defined core processes in the clinical pathway. May (1997) stated that clinical pathways in health care settings could reduce costs in three ways: by using a checklist system to eliminate certain tests and procedures found unnecessary by the hospital medical staff; by using the same medical supplies and drugs to get a volume discount on

purchases; and by predicting what supplies, staff, and space will be needed for medical treatment.

Activity Based Costing (ABC)

AKUH could reduce the cost of care by employing Activity Based Costing (ABC) in its financial management system. James (1995) stated that activity based costing focuses on processes that drive cost by tracing health care activities back to the events that generate costs. This makes possible a much more accurate measurement of financial performance. According to Campanella (1999), the aim of activity based costing is to improve overall cost effectiveness through a focus on key cost elements. Quality cost methodology seeks to assign quality-related costs to specific activities, products, processes, or departments, so that these costs can be targeted for reduction.

The existing costing systems at AKUH have several shortcomings, which could be remedied by the introduction of ABC. Healthcare organizations such as AKUH could begin constructing an ABC cost-management system by identifying their main activities, processes, or cost centers.

The activity based costing model consists of activity mapping, activity analysis, and bill of activities. Activity mapping involves mapping all the activities in illustrated sequences, activity analysis involves defining and assigning a time value to the activities, and the bill of activities involves generating a cost for each main activity. Upon completion of this three-step process, overhead and secondary activities are computed. Finally, a cost schedule is constructed to define the flow of costs throughout a healthcare activity. An activity begins with an initiating event such as, “receptionist greets patient,” and concludes with an event such as “the patient departs.”

A five-step process has been recommended by Webster (1995) for using activity-based costing to identify the costs of poor quality. Identify all activities,

(appraisals and prevention); and results (internal and external failures); determine the activity costs associated with prevention and appraisal tasks, and with internal and external failures; identify the activities that benefit from prevention and appraisal activities and that cause internal and external failures; assign the activity-based costing of quality as appropriate.

Flexible budgeting

One improvement that the current investigation recommends stems from the fact that the budget at AKU is totally inflexible, causing some concern to the operation. The political and economic realities in Pakistan are unpredictable; therefore, in my opinion, it would make much greater sense to have a flexible budget that offers some possibility of adjustment according to the changing reality. Furthermore, if flexible budgets were to be combined with efficient product costing, the budgeting system at AKUH would be further strengthened.

PROMOTION OF THE HOSPITAL AND ITS SERVICES

The AKUH is a very large private health organization in Pakistan, a low-income country. It consists of a variety of providers and is used by a wide cross-section of the population. The hospital has substantial concerns about how it can remain quality-oriented while being cost-effective. AKUH's competitors can sell the same product at a lower cost, a fact that overshadows the quality and features provided by AKUH. For example, competitors of AKUH currently offer TURP surgery at a price that is 20–30% lower. However, to arrive at this price, AKUH's competitors only take into account basic costs, such as operating room charges, some medical and surgical supplies, and surgeon and anesthesia fees. The remainder of patient requirements, such as additional medical and surgical supplies, pharmaceuticals, food, linen, and so on, are brought into the hospital by the patients and their family members.

Like western health care systems, AKUH ensures quality and prevents hospital-acquired infections, by offering all the features of a clean environment, a nutritious diet, verified pharmaceutical items, and several other features in a high quality manner. Consumers of AKUH need to be made aware that it is these quality features that are behind the hospital's higher charges. Mills, Brugha, Hanson, and McPake (2002) have stated that private health sectors can survive within the market by influencing consumers, by social marketing, and by having regulatory and participative approaches to meet consumer satisfaction. The following strategies can allow AKUH to retain its volumes among its competitors.

Influencing consumers

Consumers in low-income countries face a number of problems in relation to treatment. They often lack knowledge about appropriate means of treating and preventing illness. Consumers are usually unable to assess the technical quality of services, and those with low incomes often choose to use practitioners in the informal sector, such as unqualified providers and drug sellers, rather than higher quality private providers such as AKUH.

AKUH, therefore, needs to influence potential consumers through its marketing department, by employing methods of encouragement to use the private sector. Such methods might include improving consumer information, making services or products more affordable through some form of subsidy, and creating alternatives for the consumer to access services at a lower cost.

Social marketing

To tackle the lack of consumer information, social marketing strategies could be used, such as commercial marketing techniques, to stimulate demand for effective public health interventions that are then sold often through the private sector.

Use of vouchers

AKUH could distribute vouchers for its services to inform the consumer about available services. While doing so, AKUH should emphasize its quality features, and also explain the benefits of those quality features in terms of service that will be long-lasting and free of complications.

Consumer protection

AKUH could also retain its existing or past clients by raising awareness regarding the consumer protection measures available within its system, such as the comprehensive patient complaint monitoring system, incident monitoring, clinical indicator monitoring, morbidity and mortality reviews, risk management, and infection control monitoring. All of these are consumer protection measures, which often do not exist in other institutional structures, for the redress of patients who have been victims of medical malpractice or negligence. These complementary measures, which are signs of clinical quality, are needed to confront the poor quality of care in some institutions within the private sectors.

INTRODUCING QUALITY COSTING

The final recommendation is to reduce the cost of care by quality costing. Quality cost represents the difference between the actual cost of a product or service and what the reduced cost would be if there were no possibility of sub-standard service, failure of products, or defects in their manufacture. According to Campanella (1999), quality costing includes prevention costs, appraisal costs, and failure costs. Prevention costs are the costs of all activities specifically designed to prevent poor quality in products or services. Appraisal costs are costs associated with the measuring, evaluating or auditing of products or services to assure their conformance to quality standards and performance requirements. Failure costs are costs resulting from products or services

not conforming to the customers' requirements. The goal of any quality cost system, therefore, is to facilitate quality improvement efforts that will lead to operating cost reduction opportunities.

In summary, an effective quality cost program consists of the following steps: establish a quality cost measurement system; develop a suitable long-range trend analysis; establish annual improvement goals for total quality costs; develop short-range trend analysis with individual targets, which collectively add up to the incremental demands of the annual improvement goal; and monitor progress against each short range target, and take appropriate corrective action when targets are not being achieved.

Dissemination of Study Findings

The findings of this study will be disseminated within the research setting. The reports will be shared initially in the urology grand round with team members, as they have been directly impacted by the study conducted. The team members' clinical knowledge will also benefit immensely from the contents of this report. The findings will then be presented at an AKUH symposium to an audience of hospital administrators, students and clinical staff. The findings will also be presented at international forums, and will be published to disseminate the information at large.

Conclusion

Nurses have the unique and wonderful opportunity of being in a position to make a difference in the lives of many people. Nurses are also privileged to be able to learn and grow personally from the courage, self-will, and incredible spirit that patients display during every day of their illness and healing journey. The diverse role of the nurse suggests that although technical and clinical skills are very important, they must be accompanied by human supportive skills. As nurses, we need to embrace our

humanness and learn to truly be with our patients, to take the time to get to know them, and to discover what has importance and meaning for them as they describe their experiences to us. Nurses play an important role in quality initiatives and new innovations by active participation in the development and implementation of these innovations.

In closing, the researcher is satisfied that the present investigation met its fundamental aim of improving quality and multidisciplinary collaboration by the implementation of a clinical pathway.

The application of King's conceptual framework and theory of goal attainment ensured the design of an integrated clinical pathway that achieved several goals: an improvement in patient outcomes; an increase in clinical effectiveness, by decreasing variation in practices; and a streamlining of core processes for all patients in a specific patient population, by ensuring that all interventions are appropriate and timely with no critical aspects of care omitted; the enhancement of multidisciplinary collaboration and continuity across the care continuum, by the delivery of coordinated care.

The current investigation identified that the successful implementation of integrated clinical pathways can help health care professionals, managers, and administrators in meeting one of their biggest challenges, which is to make optimal use of limited resources while delivering top-caliber and timely care.

The integrated clinical pathway of TURP also facilitated effective patient/client-centered care across the continuum. Using a coordinated and collaborative approach in the development and implementation phase reduced duplication of efforts and ensured that patients/clients moved smoothly along a given path of care, regardless of the service/setting.

The keys to a successful clinical pathway program lie in continued clinician support and acceptance, top management leadership support and commitment by leaders and a dedicated team of case managers, doctors and paramedical professionals.

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APPENDIX A
INFORMED CONSENT FOR DATA COLLECTION
ENGLISH FORMAT

Dear Participant,

My name is Khurshid Khowaja, and I am a nurse currently doing my PhD studies at the University of Ballarat, Australia. As a part of my study I am conducting a research project entitled, "Integrated Clinical Pathway of Transuretheral Resection of the Prostate: Impact on Clinical Quality, Cost, and Patient and Staff Satisfaction". The aim of this study is to evaluate the effects of a structured clinical management pathway on clinical quality and cost of patient care, and how these effects may relate to the satisfaction of both patients and hospital staff. The study will also try to determine the outcome of a multidisciplinary collaboration of care among health team members, and its impact on the quality of patient care.

If you agree to participate in this study, you will be interviewed to evaluate your satisfaction with the care you receive, and a clinical pathway format will be used for the day-to-day documentation of care throughout your stay. Utilization of this format will not require any change in your current treatment regimen, but this pathway tool will provide ongoing guidance to your caregivers and health team members in ensuring that all of your treatment needs are met and fulfilled.

There will be no direct medical benefit to you and you will not be paid for your participation. The study, however, may provide information that can facilitate the development of a clinical practice model for the care of patients undergoing prostate surgery, like you.

You have the right to refuse to participate or to withdraw from the study at any time without penalty. If you do participate, your identity will remain anonymous because your name will not be used on any notes or interview forms completed by me, the researcher. Your interview responses will remain anonymous and will be held in complete confidence.

If you have any questions either before or after being interviewed, you may contact me at the address and telephone number shown below.

Thank you very much.

Sincerely,

Khurshid Khowaja
Director, Nursing Services
The Aga Khan University Hospital
Tel: 4930051 Ext: 3600/3601

Participant's Signature

APPENDIX A
INFORMED CONSENT FOR DATA COLLECTION
URDU FORMAT

معلومات کی فراہمی کے لیے تحریری رضامندی

محترم/محترمہ،

میرا نام خورشید خواجہ ہے اور میں ایک نرس ہوں۔ میں یونیورسٹی آف بلارٹ، آسٹریلیا سے پی ایچ ڈی کی سند حاصل کرنے کے لیے کوشاں ہوں۔ اپنی تعلیم کے ایک جزو کے طور پر میں ایک تحقیقی مقالہ بعنوان "INTEGRATED CLINICAL PATHWAY OF TRANSURETHRAL RESECTION OF THE PROSTATE: IMPACT ON CLINICAL QUALITY, COST, AND PATIENT AND STAFF SATISFACTION." پر کام کر رہی ہوں۔ اس تحقیقی مقالہ کا مقصد یہ معلوم کرنا ہے کہ ایک منظم کلینکل طریقہ کار سے مریض کی طبی نگہداشت اور اخراجات پر کیا اثر پڑتا ہے۔ ہم یہ بھی نتیجہ اخذ کریں گے کہ یہ اثر اندازی کس طرح مریض اور طبی عملے کی باہمی تسلی کا موجب بنے گی۔ اس مقالہ سے ہم یہ پتہ چلانے کی کوشش کریں گے کہ طبی عملے کی MULTIDISCIPLINARY شراکت داری سے مریض کی نگہداشت پر کیا اثر پڑتا ہے۔

اگر آپ اس تحقیق میں شامل ہونے کے لیے رضامند ہیں تو جو نگہداشت آپ حاصل کر رہے ہیں اسکی طمانیت کا معیار تعین کرنے کے لیے آپ کا انٹرویو کیا جائے گا اور آپکے ہسپتال کے قیام کے مکمل دورانیے کے دوران ہر روز کی کاروائی کو ریکارڈ کرنے کے لیے ایک کمپیوٹر پاتھوے کا نمونہ استعمال کیا جائیگا۔ اس نمونہ کے استعمال سے آپکے موجودہ علاج کے طریقہ کار میں کسی تبدیلی کی ضرورت نہیں ہوگی بلکہ یہ پاتھوے آپکو نگہداشت مہیا کرنے والوں کے لیے اور طبی ٹیم کے ممبران کو یہ یقین مہیا کرنے کے لیے کہ آپکے علاج کی تمام ضروریات مکمل طور پر پوری کی جارہی ہیں، مسلسل رہنمائی مہیا کرے گا۔

اس تحقیق میں حصہ لینے کی صورت میں آپکو کوئی اضافی علاج کی سہولت یا مالی منفعت حاصل نہیں ہوگی۔ لیکن ممکن ہے کہ یہ تحقیق مستقبل میں ان مریضوں کے علاج میں مدد دے سکے جو کہ پیشاب کے غدود کے عمل جراحی سے گزر رہے ہوں۔ جیسے کہ آپ۔

آپ کو حق حاصل یہ ہے کہ آپ اس تحقیق میں شرکت کرنے سے انکار کر دیں یا پھر کسی بھی مرحلے میں اپنے آپ کو اس تحقیق سے علیحدہ کر سکیں اس کے لیے آپ کو کسی بھی کے جرمانے کا موجب نہیں ٹھہرایا جائے گا۔ آپ کا نام اور آپ کی کسی قسم کی مدد، صیغہء راز میں رکھی جائے گی اور آپ کا نام کسی بھی قسم کے نوٹس میں نہیں لکھا جائے گا۔

اگر آپ کو انٹرویو سے پہلے یا بعد میں کسی بھی قسم کی کوئی معلومات درکار ہوں تو درج ذیل ٹیلیفون نمبر 3600 اور ایڈریس پر مجھ سے رابطہ قائم کریں۔

شکریہ

خورشید خواجہ

ڈائریکٹر

ری آغا خان یونیورسٹی ہسپتال

دستخط _____

APPENDIX B
GLOSSARY OF TERMS

anemia: Patient with hemoglobin of < 11g/dl.

anesthesia charges: Charges for anesthesia used during the TURP surgery.

appropriate and complete written physician order: The physician orders were complete and appropriately written.

attendant's fee: Fee of the attending physician's daily round.

bed charges: Charges according to bed category, such as ward, semi-private and private.

cancellation rates: TURP surgery is cancelled on the scheduled surgery day. This cancellation could be due to physician, hospital or patient related factors.

cardiac problem: Patient with a known history of Ischemic Heart Disease (IHD) (WHO). This includes only those patients with a clear and documented history of cardiac problems based on clinical symptoms, previous ECG findings, exercise stress test, thulium scanning, or angiography.

constipation: Disturbances in bowel movement resulting from TURP surgical intervention.

delayed investigation results: A four to six hour delay by laboratory/radiology in the delivery of investigation results to the nursing units.

delayed consultation by physician: The physician delayed seeing the patient for four to six hours.

delayed discharge due to delivery of medication: Discharge process is delayed, for more than the expected two hours, due to non-delivery of discharge medication.

delayed discharge by family: Delay of discharge in from the hospital due to family delay after the discharge process has been completed by hospital staff.

delayed education by physicians to patients: The physician delayed providing health education to the patient for four to six hours.

delayed evaluation: The physician delayed evaluation of the patient's general condition for four to six hours.

delayed follow-up: The physician delayed follow-up of the patient by four to six hours.

delayed investigation orders written by physician: The physician delayed writing the investigation orders for four to six hours.

diabetes mellitus: Patient with a documented history of diabetes with evidence of medication given for the disease. (WHO)

diagnostic charges: Charges for laboratory, radiology and neurophysiology services required by patient during inpatient hospitalization.

electrolyte imbalance: Deviation in electrolytes, sodium, potassium, and others resulting from TURP surgical intervention.

equipment availability: Required equipment, such as cardiac monitor, is available to provide safe patient care.

general health: General health was classified as good, satisfactory, or poor. *Good health* meant the patient had no co-morbidities and was able to perform all activities of living; *satisfactory health* meant the patient had one or two co-morbidities for which medical management had been sought but which had no impact on lifestyle or any activities of living; *poor health* meant the patient had more than two co-morbidities with significant impacts on health and interfering with normal lifestyle.

hematuria: Occurrence of hematuria in the first 24 hours after surgical intervention of TURP.

hypertension: Patient with a documented history of raised blood pressure prior to patient admission in the hospital. (World Health Organization [WHO] definition)

length of stay (LOS): Duration of hospitalization from admission to discharge.

medical/surgical supplies charges: Charges for supplies such as syringes, needles, cannulas, and so on, used by patient during inpatient hospitalization.

no show rates: Patient did not attend on the day scheduled for surgery. This could be due to physician, hospital or patient related factors.

operating room charges: Charges for operating room time for the TURP surgery.

other surgery on same day: Patients who met the selection criteria for TURP who were having other surgery on the same day they were scheduled for TURP.

overall cost: Total cost of hospitalization from admission to discharge.

pharmacy charges: Charges for medications and intravenous infusions used during inpatient hospitalization.

phlebitis: Redness and swelling around the intravenous site resulting from intravenous therapy during post-operative period.

plan of care discussed with the patients by physicians: The physician discussed the plan of care and patient's progress with the patient on a day-to-day basis.

post-operative complications: Any complication occurring during post-operative hospitalization.

post-operative problem: Any problem occurring during post-operative hospitalization.

pre-operative teaching conducted in clinic: The patient with surgical intervention of TURP required teaching related to TURP surgery in the clinic by nursing staff.

problems in patient care with support services: Delayed responses by food services, pharmacy, and physiotherapy departments to patient care requests relevant to that

department; for example, patient needs chest physiotherapy, and physiotherapy is delayed for four to six hours.

special consultancy charges: Charges for any special consultation required by the patient such as consultation for cardiology and gastroenterology services.

surgical fees: Fee of the surgeon incurred for a specific surgical procedure; in the case of TURP, the fee of the surgeon who performed TURP surgery on the patient.

time of discharge orders written by physician: The time written with each entry by physicians on all physician orders including discharge orders.

time of discharge procedure: The total time taken from entry of physician discharge order until discharge process is completed. The standard time for completion of the discharge process at AKUH is two hours, during which the patient's bill, discharge medication, appointment card for follow-up visit, discharge education, discharge summary and some other activities are completed.

time patient left hospital: The time the patient left the hospital after completing the discharge process. According to the hospital discharge policy, the patient should leave the hospital by 1600 hours.

timely documentation of discharge notes: All elements of patient care delivery relevant to discharge have been entered in the nursing documentation as they occurred.

UTI: Infection of the urinary tract.

utilization of pre-anesthesia clinic: The patient with surgical intervention of TURP utilized the pre-anesthesia clinic and had anesthetic assessment in the clinic.

waiting time at admission office: The time computed from the patient's entry at the admission office to the time the patient was sent to the nursing units.

waiting time at nursing station: The time computed from the patient's arrival at the nursing units to the time the patient was taken to their bed.

APPENDIX C
DATA COLLECTION TOOL FOR TURP PATIENTS
VARIANCE TRACKING (CONTROL / EXPERIMENTAL GROUP)

Serial Number: _____

MR number: _____

Age (in years): _____

Employment (1=Yes; 2=No): _____
If yes, occupation: _____

Location: Karachi [ ] Other [ ]

Pre-Admission:

a) Proposed date of surgery: _____

b) Date of Admission : _____

c) Date of Surgery : _____

d) Waiting time (in minutes):
i) at Admission office : _____
ii) at Nursing unit : _____

e) Utilization of pre-anesthesia clinic (1=Yes; 2=No): _____

f) Pre-op teaching done in clinic (1=Yes; 2=No): __

Patient Related:

a) Cardiac (1 = Yes; 2 = No): _____

b) Hypertension (1 = Yes; 2 = No): _____

c) Diabetes (1 = Yes; 2 = No): _____

d) Anemia (1 = Yes; 2 = No): _____

e) UTI (1 = Yes; 2 = No): _____

f) Other surgeries on same day (1 = Yes; 2 = No): ___
If yes (specify): _____

g) General health:

Good [ ] Satisfactory [ ] Poor [ ]

Physician Related:

a) Delay consultation (1=Yes; 2=No): _____
If yes, how many days? (Specify): _____

b) Delay Evaluation (1=Yes; 2=No): _____
If yes, how many days? (Specify): _____

c) Inappropriate order (1=Yes; 2=No): ____
If yes, (specify): _____

d) POC not discussed with patient (1=Yes;2=No):___
If yes, (specify): _____

e) **Delay** Investigation (1=Yes; 2=No): ___
If yes, (specify): _____

f) Delay Follow-ups (1=Yes; 2=No): ____

g) Delay Education or explanation (1=Yes; 2=No): ___

Hospital Related:

a) Equipment unavailability (1=Yes; 2=No): ____

b) Delay Results (1=Yes; 2=No): _____

c) Problem with support services (1=Yes; 2=No): ____
If yes, (specify): _____

d) Cancellation Rate : _____

e) No show rate: _____

Nursing Related:

a) No documentation (1=Yes; 2=No): _____

b) POC not discussed (1=Yes; 2=No): ____

c) Inappropriate assessment (1=Yes; 2=No): ____

d) Physician not informed (1=Yes; 2=No): ____

e) Order not carried out (1=Yes; 2=No):_____

f) Delay in Education / explanation (1=Yes; 2=No)

Hospital Discharge:

*a) Physician order time:*_____
Date of Discharge:_____
Time of D/C proc. (in mts.):____
Delay (in mts.):_____

b) Delayed due to patient and family:
Date patient left: _____
Time patient left:_____

c) D/C process not followed by nurses:
i) Medication delayed:
(1=Yes;2=No): _____
If yes, how many hours: _____
ii) Discharge notes not done:
(1=Yes;2=No): _____

If yes, (specify reasons):_____
_____

DATA COLLECTION TOOL FOR TURP PATIENTS

Monitoring Of Clinical Indicators

(11) Intravenous Antibiotic Administration for more than 2 days	(12) Patient post op problem	(13) Complication	(14) In Hospital Mortality	(15) Re-hospitalization within 2 Weeks	(65) Length of Stay as per Plan (4 days)
a) No. of days ____	a) Electrolyte imbalance	a) UTI		a) yes	a) Yes
b) Reason	b) Constipation	b) Hematuria		b) NO	b) No
	c) Phlebitis				c) If no, no. of days ___
	d) Others				

Financial Variances

(20) Bed charges	(21) Attendant Fees	(22) Surgical Fees	(23) Anesthesia	(24) Sp. Cons	(25) Pharmacy	(26) Med/Surg	(27) Diagnostic	(28) OR Charges	(29) Others	(30) Total

APPENDIX E
PATIENT SATISFACTION SURVEY QUESTIONNAIRE (CONTROL & EXPERIMENTAL GROUP)

Dear Patient,

My name is Khurshid Khowaja, I am the Director, Nursing Services at AKUH. Currently enrolled in PhD studies at the University of Ballarat, Australia and my research study is examining a new approach for providing clinical services to patients at AKUH. I am particularly interested in how clinical pathways impact upon the satisfaction of patients who have received surgery for TURP.

You have been selected for this study because recently you have been a patient at The Aga Khan University Hospital for TURP Surgery. The Aga Khan University Hospital is committed to provide you high quality care during hospitalization. As such we value the comments that you have to make regarding your stay with us.

The Human Subject Committee of AKUH and the Human Research Ethics Committee of University of Ballarat have approved the project.

Please take a few minutes to complete the attached questionnaire. I appreciate your assistance with this project. Should you wish to discuss it with me or ask questions to my research supervisor or me. Please contact me on Tel. # 4859-3600/3601.

Upon completion, send it back to me in the prepaid envelope provided.

E-mail address of supervisor. c.deans@ballart.edu.au

Thank you for your time and cooperation.

Ms. Khurshid Khowaja
Director, Nursing Services
The Aga Khan University Hospital
Tel # 92-21 4930051 Ext: 3600/3601

Gender M ☐ F ☐ **Length of Stay** _____ days

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. My admission process to hospital was completed smoothly without any difficulties.	1	2	3	4	5
2. I was clearly informed at all times regarding, what was happening while waiting to be admitted to hospital.	1	2	3	4	5
3. My family was kept well informed about my condition and needs.	1	2	3	4	5
4. I was well informed about how long I would stay in hospital.	1	2	3	4	5
5. I received sufficient information concerning my medical condition from admission to discharge.	1	2	3	4	5
6. I received sufficient information regarding my medication administration.	1	2	3	4	5
7. The coordination of care among doctors, nurses and other hospital staff was good, who took care of me during my stay.	1	2	3	4	5
8. Nurses always seemed to be knowledgeable what they were doing and what to do next.	1	2	3	4	5
9. Nurses explained the overall plan for my care to me.	1	2	3	4	5
10. Nurses explained the care they carried out in a way that I could understand.	1	2	3	4	5
11. Doctors' told me all I wanted to know about my condition.	1	2	3	4	5
12. Physician seemed to be knowledgeable what was happening at all stages during my care.	1	2	3	4	5
13. I and my family were advised of my discharge on time that allowed me to do all necessary preparations.	1	2	3	4	5
14. The discharge arrangements were handled smoothly.	1	2	3	4	5
15. Overall the quality-of-care and service I received were good.	1	2	3	4	5

16. Did you have any complications during your stay at the Aga Khan University Hospital?

Yes ☐ No ☐

If yes, please write down what it was.

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17. Do you have any comments regarding further improvement in hospital systems?

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18. Please feel free to add any suggestion that you may have?

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Thank you for your time and cooperation.

Please return completed surveys to Khurshid Khowaja, Director, Nursing Services, the Aga Khan University Hospital, in the prepaid envelope provided.

APPENDIX F
STAFF SATISFACTION SURVEY QUESTIONNAIRE (CONTROL GROUP)

Dear Staff Member,

My name is Khurshid Khowaja, I am the Director, Nursing Services at Aga Khan University Hospital (AKUH). Currently enrolled in PhD studies at the University of Ballarat, Australia and my research study is examining a new approach for providing clinical services to patients at the AKUH. I am particularly interested that how clinical pathways impact on staff satisfaction that was involved in care of patients with TURP surgery.

The Human Subject Committee of AKUH and the Human Research Ethics Committee of University of Ballarat have approved the project.

Please take a few minutes to complete the attached questionnaire regarding the implementation of Clinical Pathway for TURP Patients. I appreciate your assistance with this project. Should you wish to discuss it with me or ask questions to my research supervisor or me. Please contact me on Tel. # 4859-3600/3601.

Upon completion, send it back to me in the prepaid envelope provided.

E-mail address of supervisor: c.deans@ballarat.edu.au

Thank you for your time and cooperation.

Ms. Khurshid Khowaja
Director, Nursing Services
The Aga Khan University Hospital
Tel # 92-21 4930051 Ext: 3600/3601

Gender M ☐ F ☐ Age _____ years

Please tick appropriate response (✓)

1. What is your designation?

☐ Medical Resident
☐ Medical Intern
☐ Nursing Technician
☐ Clinical Nurse Teacher
☐ Registered Nurse
☐ Physiotherapist
☐ Dietitian
☐ Other:_____
☐ Pharmacy

2. How long have you worked in this area?

☐ less than 1 year
☐ 1-2 years
☐ 3-4 years
☐ 5-6 years
☐ greater than 6 years

Please circle the most appropriate response.

	Strongly Disagree	**Disagree**	**Unsure**	**Agree**	**Strongly Agree**
3. Care for TURP patients is consistent and well organized within your department.	1	2	3	4	5
4. Communication between staff members, regarding patient care, is effective within your particular discipline.	1	2	3	4	5
5. Staff give patient consistent information	1	2	3	4	5
6. Patient received early, concise, adequate and consistent education and advice regarding their condition and treatment.	1	2	3	4	5
7. Patient discharge planning is well organized.	1	2	3	4	5
8. Both the patient and relatives are aware of the patients expected length of stay in hospital	1	2	3	4	5
9. All those involved in the patient care know what is supposed to happen to the patient on each particular day.	1	2	3	4	5

18. Please add any additional comments and suggestions that you may have regarding any aspect of care during hospitalization.

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APPENDIX G
STAFF SATISFACTION SURVEY QUESTIONNAIRE (EXPERIMENTAL GROUP)

Dear Staff Member,

My name is Khurshid Khowaja, I am the Director, Nursing Services at Aga Khan University Hospital (AKUH). Currently enrolled in PhD studies at the University of Ballarat, Australia and my research study is examining a new approach for providing clinical services to patients at the AKUH. I am particularly interested that how clinical pathways impact on staff satisfaction that was involved in care of patients with TURP surgery.

The Human Subject Committee of AKUH and the Human Research Ethics Committee of University of Ballarat have approved the project.

Please take a few minutes to complete the attached questionnaire regarding the implementation of Clinical Pathway for TURP Patients. I appreciate your assistance with this project. Should you wish to discuss it with me or ask questions to my research supervisor or me. Please contact me on Tel. # 4859-3600/3601.

Upon completion, send it back to me in the prepaid envelope provided.

E-mail address of supervisor: c.deans@ballarat.edu.au

Thank you for your time and cooperation.

Ms. Khurshid Khowaja
Director, Nursing Services
The Aga Khan University Hospital
Tel # 92-21 4930051 Ext: 3600/3601

Please tick appropriate response (✓)

1. What is your designation?

☐ Medical Resident
☐ Medical Intern
☐ Nursing Technician
☐ Clinical Nurse Teacher
☐ Registered Nurse
☐ Physiotherapist
☐ Dietitian
☐ Other:_____
☐ Pharmacy

2. How long have you worked in your current profession?

☐ less than 1 year
☐ 1-2 years
☐ 3-4 years
☐ 5-6 years
☐ greater than 6 years

Please circle the most appropriate response.

	Strongly Disagree	**Disagree**	**Unsure**	**Agree**	**Strongly Agree**
3. Care for TURP patients is consistent and well organized within your department.	1	2	3	4	5
4. Communication between staff members, regarding patient care, is effective within your particular discipline.	1	2	3	4	5
5. Consistent information is provided to all patients having TURP surgery.	1	2	3	4	5
6. All patients undergoing via TURP surgery received early, concise, adequate and consistent education and advice regarding their condition and treatment.	1	2	3	4	5
7. TURP patients discharge planning is well organized.	1	2	3	4	5
8. Both the patient and relatives are aware of the patient's expected length of stay in hospital for TURP surgery.	1	2	3	4	5
9. All those involved in the patient care of TURP surgery know what is supposed to happen to the patient on each particular day.	1	2	3	4	5

10. Are you aware of the clinical pathway for care of TURP patients?

☐ Yes
☐ No

11. Have you had education regarding the implementation of the clinical pathway?
    - ☐ Yes
    - ☐ No

12. Is clinical pathway time saving, if yes then how much: _____
    - ☐ Yes
    - ☐ No

13. Are you satisfied with the content of TURP clinical pathway?	1	2	3	4	5
14. Interaction between physicians and nurses and other professionals has increased after use of TURP clinical pathway.	1	2	3	4	5
15. Coordinated care among different professionals has been delivered to patients with TURP clinical pathway.	1	2	3	4	5

16. Please specify three benefits of clinical pathway of TURP?

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17. What is your reaction towards implementation of TURP clinical pathway?

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18. Please add any additional comments and suggestions that you may have regarding any aspect of care during hospitalization.

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